SEPTEMBER 1924 ~ № 224

Monthly

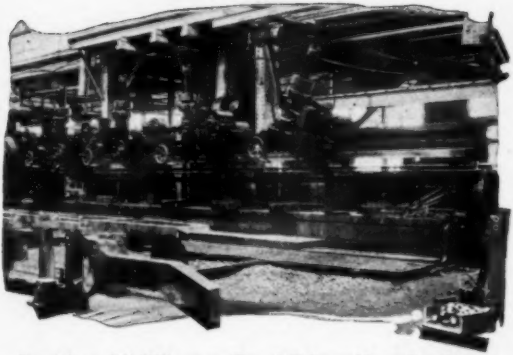
A Reference for Buyers

HITCHCOCK'S MACHINE TOOL BLUE BOOK

Distributed Free to Machine Tool Users Everywhere in the United States and to Dealers in American Machinery Abroad

Published by
A.H.HITCHCOCK
1229-1235 Caxton Building
Chicago

FOR INDEXES SEE LAST PAGES



Four 5 h. p., 500-1500 r. p. m. Type T Reliance Heavy Duty Motors driving four-spindle Bement Locomotive Frame Drilling Machine.

Protect your reputation as a good judge of machine tools

You select big machines like this because they have the ability to produce at low cost. This ability, however, is dependent upon reliable driving power.

You can get the results you want and protect your reputation as a good judge of machine tools by specifying Type T Reliance Motors for such work. Because they are well built with more material in vital spots, these motors will make your big machines show more productive hours for the year.

Detailed evidence is given in our Bulletin 2014

Reliance Electric & Engineering Co.

1050 Ivanhoe Road, Cleveland, Ohio

Branches:

Boston New York Philadelphia Pittsburgh Chicago Detroit Cincinnati Birmingham, Ala.

We specialize in motors, sizes 1/2 to 200 h. p. constant and adjustable speed D. C.; squirrel cage and slip ring A. C.

Type T Heavy Duty RELIANCE MOTORS

Direct Current

Rhodes Combined Shaper and Slotter

Shaper Stroke 7"—Slotter Stroke 3½"

The larger machines have larger parts; the RHODES has smaller parts—that's all—but it's fully as accurate and reliable.

Smaller parts cost less money. Therefore the RHODES costs less money. But it's more readily manipulated than are more cumbersome machines and out-performs them on work within its capacity.

Ask your dealer or write for
CATALOG H22

The Rhodes Mfg. Company
984 Park Road, - Hartford, Conn.

SHAPERS—RHODES—SLOTTERS

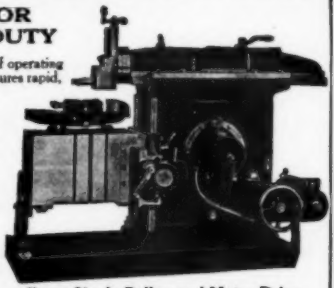
COLUMBIA SHAPERS

SUPERIOR HEAVY DUTY

Centralized location of operating handles and levers insures rapid, convenient operation. Massive construction and powerful drive provides for handling heavy work to best advantage.

SIX SIZES
16"—20"—24"
28"—32"—36"

Bulletin No. 7 giving full details sent free on request.



Cone, Single Pulley and Motor Drive

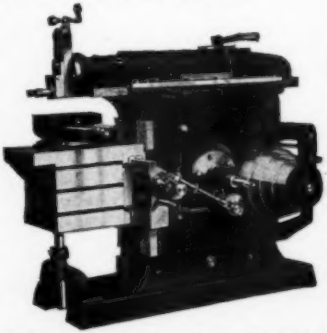
THE COLUMBIA MACHINE TOOL CO., HAMILTON, O.

Manning, Maxwell & Moore, Inc., Selling Agents, New York City and Branches

SHAPERS

12", 14", 16" Plain Crank, 16", 20", 25" B. G. Crank, either Cone Driven or through Speed Box.

32" Back Geared Crank, Single Pulley Drive.



The Smith & Mills Co., Cincinnati, O., U.S.A.

"They're Always in Stock" —in Seven Cities

Bunting

The Bunting Brass & Bronze Company is a local institution in the seven principal industrial centers of America. In Toledo, New York, Boston, Philadelphia, Cleveland, Chicago, San Francisco, you'll find great stocks of the 269 "Ready Made" BUNTING BUSHING BEARINGS; counsel, quotations, personal service on special sizes, designs or alloy; ample stocks of Piston Pin Bushings and Spring Bolt Bushings for automotive replacement; and Cored and Solid Bars of BUNTING Phosphor Bronze for shop use.

MANUFACTURERS:—If you are not already benefiting by BUNTING'S "Ready Made" BUSHING BEARINGS phone or write for stock list W.

SPECIAL SIZES:—BUNTING experience and plant efficiency will increase the satisfaction and economy of using bearings of your own design. Let us figure with you.

CORED AND SOLID BARS:—The 5 sizes of Cored and Solid bronze bars most often required for general shop use are packaged in a strong wooden box with a hinged lid—we call this The BUNTING Bronze Bar Shop Assortment. Ask about it. Write for list 205 showing Cored and Solid Bars in stock.

THE BUNTING BRASS & BRONZE COMPANY
TOLEDO, OHIO

Branches and Warehouses at

NEW YORK
245 West 54th St.
Circle 0844

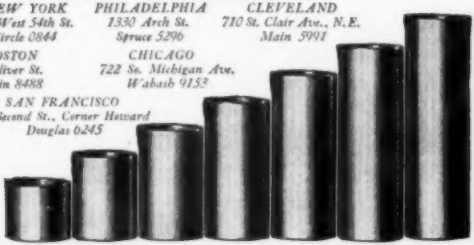
PHILADELPHIA
1330 Arch St.
Spruce 5296

CLEVELAND
710 St. Clair Ave., N.E.
Main 5991

BOSTON
36 Oliver St.
Main 8488

CHICAGO
722 So. Michigan Ave.
Wabash 9153

SAN FRANCISCO
198 Second St., Corner Howard
Douglas 0245



BUNTING BUSHING BEARINGS

SEBASTIAN—

15" Geared Head Lathe
Single Pulley Drive
Without Motor
$735

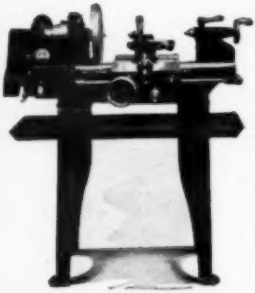
The knowledge, experience and skill derived from almost forty years of exclusive lathe building, has made *Sebastian* Lathes the standard of QUALITY in the medium priced lathe field.

Designed Right—Built Right—Priced Right and Guaranteed Correct

Write for details on our new Gold Seal Lathes

The Sebastian Lathe Company
1000 Culvert St., Cincinnati, O., U. S. A.

Monarch Jr. Lathes



are the smallest members of the Monarch lathe family. Yet they are the "biggest little lathes" built.

The Monarch line of lathes includes all sizes and types from the little 9-inch Junior lathe to the big, massive 30-in. lathe. In this line there is a lathe to fill your requirements at the price you want to pay.

Send for Catalog

The Monarch Machine Tool Co.
206 Oak Street, Sidney, Ohio

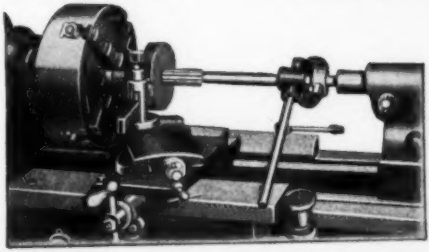
If you ever ran a lathe it has surely happened to you. It continues to happen daily in almost all shops.

Until the Nicholson Reamer Holder was invented there was no other method by which a mechanic could keep his reamer from jumping in, or prevent it from reaming a tapered hole. This Holder can also be used instead of a chuck for drills and as a hold back in a lathe. It has many uses and saves double its cost in a short time. No. 1 size takes straight shank reamers and drills up to 1" dia., and No. 2 takes up to 2" in dia.

Send us sketch of socket or number of Morse taper of lathe you would like to try one on, and we will send it on trial. If you desire further information and circular, write us.

W. H. Nicholson & Company

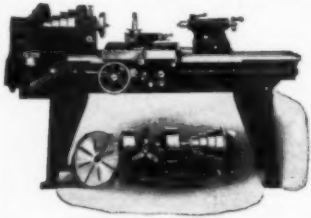
117 Oregon Street, Wilkes-Barre, Pa.



A. V. Carroll Lathes

Have patented invisible gap without extra cost

Made in sizes 12", 14", 16", 18" and 20"



High quality at the lowest possible cost to you.

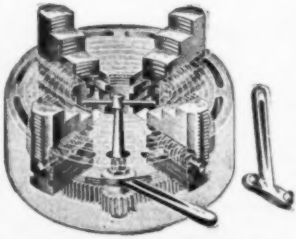
Easy payment plan if desired.

Write for circular, and let us show you a big saving

A. V. Carroll Machine Tool Co., Norwood, Cincinnati, O.

Why Buy Two Chucks

When you can do it all with one?



The Westcott Combination Chuck handles work up to the full swing of the lathe, so that it does everything you can do with an Independent and small Universal. The saving in equipment cost is well worth while. Let us give you some actual figures on it, and show you a real economy.

The information won't cost you a penny. Write

Westcott Chuck Company

Originators of the COMBINATION Chuck

Lock Drawer "P" **Oneida, N. Y.**

Install a South Bend Lathe

Under Our

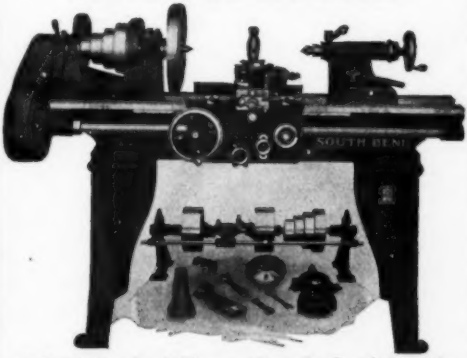
Easy Payment Plan

Our co-operative Easy Payment Plan allows you to install a South Bend Lathe in your shop by making one payment with the order; the balance to be paid month by month, the amount depending upon the size of the lathe.

There is no advance in price in buying a lathe under this plan. You can put in your lathe—the lathe helps you to pay its own pay; it increases your business, and it advertises your shop.

Ask your dealer about it, or write us mentioning the size lathe that you think is best for your work and we will send you an itemized quotation and the terms of our co-operative Easy Payment Plan.

Over 31,000 Satisfied Users



13"x6' Standard Change Gear Lathe, $316.00

Other Sizes, 9" to 24" Swing—2½' to 16' Beds
Quick Change Gear or Standard Change Gear Pattern

South Bend Lathe Works

ESTABLISHED 1906

521 E. Madison St., South Bend, Ind.

E-Z THREAD DIAL E-Z

New device lowers cost of thread cutting on engine lathes.

For all size lathes.

E-Z to attach.

Send for folder.

Eliminates stopping or reversing the lathe.

Saves cost of backing belt.

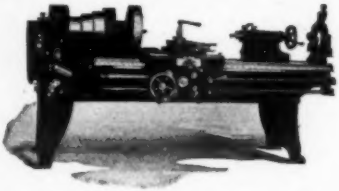
Saves power to drive same.

E-Z to use.

Sent on fifteen days' trial.

JAMES M. COLVEN, 20 Wolffe Street, Yonkers, N. Y.

SIDNEY LATHES



Accuracy, strength, and a size for every requirement.
Medium, Standard and Heavy Patterns.

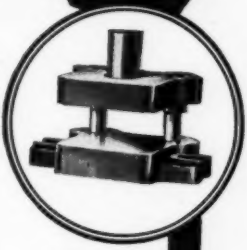
Write for complete catalog

The Sidney Machine Tool Co.

Sidney, Ohio

Save 4ways

convenience
economy



Why make your own die sets when Danly Die Sets cost so much less, are of precisional accuracy and are so much more convenient?

You save in four ways

1 **They cost less**
2 **Immediate shipment from stock, no delay**
3 **Less capital invested**
4 **Increased production**

Danly Die Sets are sold accurately machined, completely assembled or parts separately. All parts interchangeable and of the best workmanship. Immediate shipments from stock.

Die Sets
Leader Pins
Dowel Pins
Bushings

[***Send for full particulars***]

Danly Machine Specialties, Inc.
4913 Lincoln Avenue, Chicago

DANLY STANDARD

We Carry in Stock—

Collets of all sizes, for all makes of lathes, at reasonable prices

Just write us the make and swing of your Lathe—we'll do the rest

Hardinge Standardized

Draw-in Chucks or Collets

For Bench Lathes, Engine Lathes, Tool Room Lathes, Bench Type Milling Machines, and Screw Machines.

Write for Price List. And what do you need now?

HARDINGE BROS., Inc., 1770 Berteau Av. CHICAGO, ILL.

Barker Wrenchless Chuck

Developed and Manufactured by Thomas Elevator Co.

A complete Chucking Unit in Itself. The Barker Wrenchless Chuck requires No Accessory Installations.

Made in two- and three-jaw styles, for every kind of turret lathe, automatic, and semi-automatic machine work.

Thomas Elevator Co.

Chuck Division

31 So. Hoyne Ave., Chicago

R-S Collapsible Taps

Produced by R-S Experts

This modern tool makes good in every shop that gives it a try-out. It's the ripe product of careful and exhaustive experimenting by our corps of experts, and we recommend it to all users as being on a par with the now famous R-S (Boehm) Automatic Die Head.

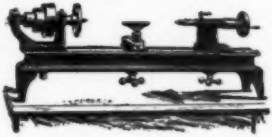
A collapsing tap is more efficient than the solid kind, and the R-S is *positive* in action, so that it *cannot fail.* You can withdraw the chasers at any time because its action does not depend on springs or similar contrivances. The capacity is for 1 in. and up.

Write for Circular giving full details and interesting information

Rickert-Shafer Co.

1110 Cherry St., Erie, Pa.

Bench Speed Lathe



Swing—8"
Length of bed—3'
Distance between centers—20"

Write for leaflet No. H43 and prices

The W. W. Oliver Mfg. Co.

1495 Niagara St., Buffalo, N. Y.

RACINE "JUNIOR"

Portable—High Speed Metal Cutting Machine

Belt or Motor Driven.

Positive Lift. Draw Cut.

This machine is a wonder in its class. Every shop needs this handy outfit. Can be moved easily and quickly to any location convenient to an electric light socket. So smooth in operation and so vibrationless that it need not be bolted to floor. Normal capacity 0" to 4"—with possible adjustment for cutting larger sizes. Complete and detailed information will be sent you promptly on request.

Use "Racine" H. S. Wood and Metal Band Saw Blades and "Racine" H. S. Tungsten Power and Hand Hack Saw Blades.

RACINE TOOL & MACHINE CO.

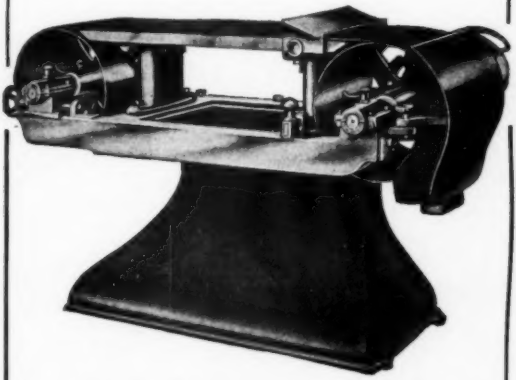
Catalog H, **1429 Junction Ave., Racine, Wis.**

"STANDARD THE WORLD OVER"

PEERLESS
SURFACING MACHINES

Will reduce grinding and finishing costs and give you better work.

Can be substituted for many expensive milling machine and planer operations.



Made also in vertical and bench models.

Send for large folder

PEERLESS SURFACING MACHINE CO., Inc.

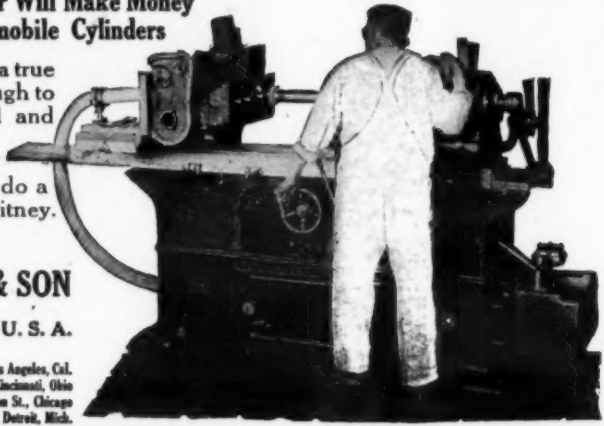
TROY, N. Y.

In Canada: A. R. WILLIAMS MACHINERY CO., Toronto

AUTO REPAIR SHOPS

The Whitney Cylinder Grinder Will Make Money For You Regrinding Automobile Cylinders

The grinding wheel travels in a true circle and grinds off only enough to make a hole that is round and straight. This machine does the work right and does it quick. That's why you can do a profitable business with a Whitney.



Write for new catalog

BAXTER D. WHITNEY & SON
Incorporated
WINCHENDON, MASS., U. S. A.

Selling Agents:
BERGER & CARTER CO., - 470 E. Third St., Los Angeles, Cal.
E. A. KINSEY & CO., - Indianapolis, Ind., and Cincinnati, Ohio
MARSHALL & HUSCHART MCHY. CO., 17 So. Jefferson St., Chicago
CADILLAC MACHINE CO., Beaubein & E. Lafayette Sts., Detroit, Mich.

Grand Rapids Universal Grinder

MOTOR DRIVEN

With All Overhead Works Eliminated

GRAND RAPIDS No. 3 & No. 4 Universal Grinders are furnished either hand feed or power feed, wet or dry, motor drive or belt drive.

CIRCULAR ON REQUEST

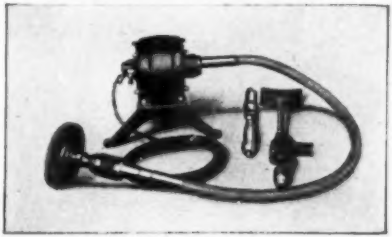
Gallmeyer & Livingston Co.

342 Straight Avenue, S. W.

GRAND RAPIDS, MICH.

The Whirlwind Buffer and Grinder

Will cut the cost on any unhandy grinding or polishing job



Send for our latest bulletin

Stow Flexible Shaft Co., 3454 Ludlow St., Philadelphia, Pa.

The Best Since 1876

One Machine For All Kinds Of GRINDING

Thompson 10"x36" Universal

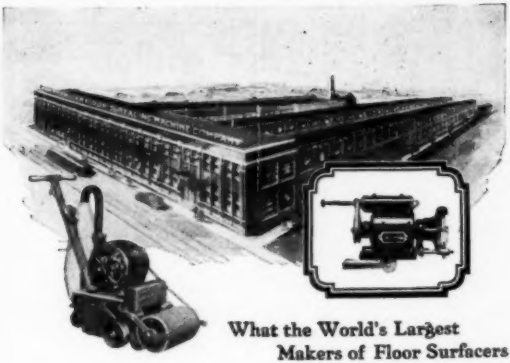
Does plain, surface, edge, die and cutter grinding like single-purpose machines.

The work adjusts to a fixed grinding wheel — an exclusive feature that's better.

Write for Bulletin

Manufactured By

THE THOMPSON GRINDER CO., - Springfield, Ohio



What the World's Largest Makers of Floor Surfacers Found Out

TO FIND a grinder that would meet their every exacting requirement, one that would give consistent, economical service for a long period of time—that was the problem that confronted the American Floor Surfacing Machinery Company.

Numerous makes of grinders were put through their paces. Exhaustive tests were conducted—accurate performance records kept. That our No. 2-AG grinder was finally selected by this great Toledo concern as standard tool room equipment is a fact in which we take legitimate pride. That this great manufacturer should voluntarily tell us that no other grinder equalled the Dumore is something of which we are more than proud.

You, too, will voice this same opinion, once you use them for jigs, dies, gages and other hardened tool work. Six styles and sizes—with individual speed ranges—provide a grinder with the correct cutting speed for any grinding need. Dynamic balance and smooth operation of Dumore grinder motors eliminate vibration. Ability to operate on alternating or direct current assures constant usage even in shops supplied with two varieties of power current. Portable, they can easily be taken to the job—saving the cost of tearing down expensive set-ups.

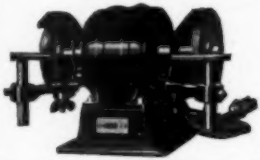
These are but a few of the advantages of Dumore grinders. Send for our catalog and learn *all* the advantages of their construction and adaptability.

Wisconsin Electric Co., 43 Sixteenth St., Racine, Wis.

DUMORE HIGH SPEED GRINDERS

No Excuse for Dull Tools

With the "Bodine" on the job



THE BODINE
Portable Electric
TOOL GRINDER

Is built like a high-grade precision machine tool, specialized to do one thing better and quicker.

Even the skilled mechanic finds it difficult to put the best cutting edge on tools on the large floor type of grinders with their coarse-grained wheels. An untrained workman can get better results on the "Bodine" in less time. Some large concerns find it an economy to have a "Bodine" in every department.

Write for particulars

The Bodine Electric Company
2256 West Ohio St., Chicago, Ill.

DUWELL

Motor Driven Bench Grinder

Complete As Shown, $45

The last word in **durability**—it stands the gaff.
And tools ground by the Duwell are **ground right.**

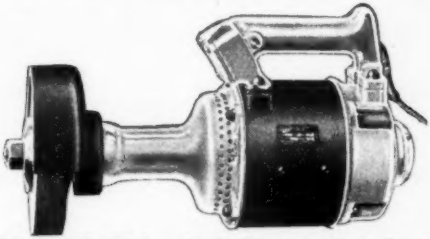
A high grade, powerful grinder, but still compact and portable. Motor **GEARED** to shaft; Bunting phosphor bronze bearings, 5" wheels, carbon steel shaft, universal dust-proof motor. Can furnish special equipment.

MANUFACTURED BY

J. A. FINLEY CO., GRINDER DIVISION
117 Brighton Ave., Allston, Mass.

This Handy "HISEY" Grinder—

Is One of Our Universal Favorites



½ H. P. Portable Grinder, with 5" Extension, for A. C. or D. C.

"HISEY" PORTABLE ELECTRIC GRINDERS: The above is only one of the many types and sizes described in our Bulletin 1404, which we shall be pleased to send you. We furnish them for either A. C. or D. C., also a Universal Grinder for both currents. They are equipped with ball bearings throughout, and are built with the "know how" that insures the highest degree of service in every way.

And "HISEY" Electric Drills—

THESE SUPERIOR PORTABLE TOOLS, of all-ball-bearing construction, are especially notable for their durability, accessibility and general utility. Built for A. C. or D. C. or with Universal Motor. The latter, which is of our own design and manufacture, is the best thing ever offered in this line—is cool running and does not operate at dangerous speeds. "Hisey" products are backed by 24 years' experience. Bulletin No. 106 describes them.

We invite you to write us about your drilling and grinding problems

Hisey-Wolf Machine Co.

Cincinnati, Ohio

Agencies in All Principal Cities

Our Hollow Bored Forgings And Steel Shafts

Are RIGHT in both QUALITY and PRICE

Piston Rods
Clutch Shafts
Lathe Spindles

Rams
Steel Pipes
Etc., Etc.

Send along your blueprints with a trial order; we'll both be pleased

American Hollow Boring Co.
Erie, Penna.

Special Machinery

Contractors, Builders, and Designers

C. H. Cowdrey Machine Works

Established 1875 **Fitchburg, Mass.**

Type C-1 Tool

More Economical than a Diamond

You will produce work at infinitely less expense by using the

"Precision" Roughing and Semi-Finishing Wheel Truing Tool

Not a substitute for the diamond, but built on an entirely different principle which is an improvement over the diamond in that it produces work equal or better than that of the diamond and at a greatly reduced cost.

It will pay you to put Precision Wheel Truing Tools to a test.

Ask for descriptive booklet

The Precision Truing Machine & Tool Co.

CINCINNATI

POWELL BLOW GUN

Designed to dispense air with utmost economy.

Used for cleaning machines, machine tools and work benches.

Made with different tips for special requirements.

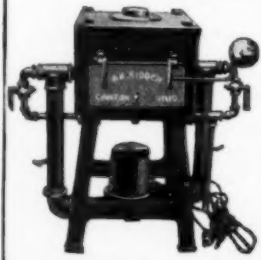
Circular on request.

The Wm. Powell Co.

2525 Spring Grove Ave., Cincinnati, O.

Single Unit Heat-Treating Furnaces

Forge, Semi-Muffle, Full Muffle and Combination Types



Furnaces for annealing, carbonizing, melting, hardening and tempering; in a full range of sizes to meet the needs of the small tool room or machine shop, as well as the largest manufacturing plant.

Ask the man who uses one; if you don't know him, ask us

A. B. KIDDER, 1104 5th St., N. E. CANTON, O.

Webster & Perks

GRINDING MACHINES

ABSOLUTELY NEW

Yet Priced to Compete with Used Tools

Universal machines combine tool room accuracy with great versatility, rigidity and power for quantity production. Plain machines handle either straight or taper grinding with extreme accuracy. All machines are brand new, and are given thorough inspection and test under belt before shipping. A real bargain at the price.

Send for Circular

Barber-Colman Company
Rockford, Ill., U. S. A.

Strand

Drill Press Attachment

FOR

Driving Screws and Nuts

Several Sizes

Manufactured By

N. A. Strand & Co.

CHICAGO

5001 North

Lincoln

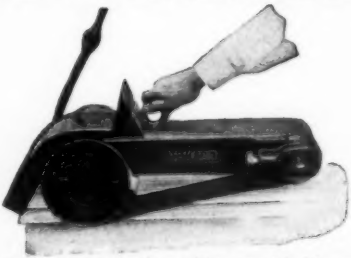
Street

Drive

Them Down

by Power

BELT GRINDER



It will do the work of a milling machine for surfacing bearing caps and small castings.

Operates in either a horizontal or vertical position from any electrical circuit. *Write for circular.*

Porter-Cable Machine Co., Syracuse, N. Y.

DRILLING

2200 Holes Per Hour

With a Leland-Gifford High Speed Drilling Machine and a proper fixture an operator can drill 2200 pieces per hour as per cut. It is being done.

Why not let us tell you about our machines and what they will do on your work.

Write us to have our representative call

Leland-Gifford Co.
Worcester, Mass., U. S. A.

A Stitch In Time Saves Much Trouble

The Walton Tap Extractor

Quickly Removes Broken Taps

Fully 90% of all taps break. You've had 'em break, and will have more. When it happens at or below the surface, it spells t-r-o-u-b-l-e. Like taking "a stitch in time," you should have a WALTON on hand, always ready. It removes the broken pieces easily and quickly, without injury to threads. And it costs so little. Sizes No. 8 to 1¼ in.

Just say "Ship on 60 days' approval"

THE WALTON CO., Hartford, Conn.

In a Filing Contest—

between 10 expert filers on one side, and

The "Hartford" Filing Machine

on the other, the latter would easily hold its own. And it would not be for just a few tense minutes—the "Hartford" would keep it up hour after hour and week after week. If kept busy it will pay for itself in a comparatively short time. Made in Floor and Bench Types.

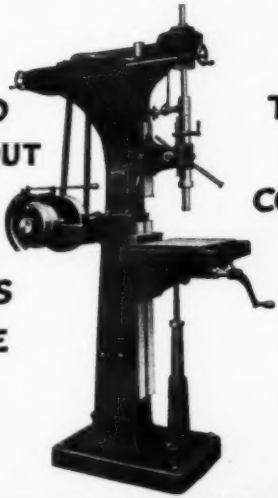
A sure cost-reducer—write for folder and price

The Robinson Tool Works, Inc.

Waterbury, Conn.

GET THE *Avey*

TO DO WITHOUT AN AVEY COSTS MORE



THAN IT COSTS TO BUY IT

THE AVEY DRILLING MACHINE CO.
CINCINNATI
OHIO

The BARKER GENERAL PURPOSE VISE

For Planers, Shapers, Drilling and Milling Machines

Two Sizes

Width of jaws	11½"—12"
Depth of jaws	2½"— 3"
Jaws open	8" —12"
Weight	160—210 lbs.

Also 16" Mold Makers' Vise

OUR MOLD MAKERS' VISE has 13" width of jaws, 7" depth, and jaws open 16"—weight 290 lbs.

ALL BARKER VISES are made **extra heavy, with steel faced jaws, and are graduated to swivel any angle.** They stand lots of hard usage.

Get in touch with us before buying

WM. BARKER & CO.

Manufacturer of Machine Tools, COVINGTON, KY.

Prevents Tap Breakage

On Those Tough Jobs

Many a tapping job has been a regular tap breaker, until they began to use the

Woodstock Improved Safety Tapping Chuck

Wherever this Chuck is employed such troubles are eliminated. It automatically releases tap the moment it binds or strikes bottom. Saves time, taps and material.

A trial order will delight you

Peter Bros. Mfg. Co., 115 Railroad St., ALGONQUIN, ILL.

A New SUPER Drill

Ball Bearing Built-in Construction

The New Aurora 28-inch

Built-in construction: All moving parts, except spindle and feed rod, are enclosed. This protects vital parts from foreign matter and provides greater safety to operator.

Ball bearing: It is ball bearing everywhere except in the quill. By the elimination of friction it delivers more power at the drill point, insuring maximum drilling capacity.

Other features are: Six feeds and 16 spindle speeds, all plainly marked, without stopping mechanism; bearings and gears run in oil, with glass gages; all controls in front; friction tapping attachment if desired; super-construction throughout, for the best practical results; and the price is right, too.

Just say "Tell us about your Super Drill"

THE AURORA TOOL WORKS

803 Exporting St., Aurora, Indiana, U. S. A.

Steel Bearing Balls

Brass and Bronze Balls

Steel Burnishing Balls

Ask for Price List 23-H

The Abbott Ball Company

Elmwood District, Hartford, Conn.

Faster and Better Riveting

On a NOISELESS Machine

Speed: A rivet a second.

Quality: The heads are perfectly formed and highly polished, without hammer or tool marks. Simple adjustments give whatever degree of tightness or flexibility is desired.

Noiseless: It rolls or swedges the rivet shank. There are no blows. Therefore, it makes no nerve-racking noise.

Write for Catalog and send us some of your most difficult work for riveting

The Grant Mfg. & Machine Co.

C. E. Station, Bridgeport, Conn.

The Taylor & Fenn

Sensitive High-Speed Radial

Belt or Motor Drive

This great manufacturers' drill combines the speed of the sensitive with the flexibility of the radial, for practically all drilling requirements within its range. Drill the big pieces on the base and the small pieces on the table.

Tapping heads, power feed heads or hand lever feed heads may be used singly or in combination.

The drive is positive, through gears and silent chain. The spindle has three speeds and is bored for No. 2 Morse taper.

A thorough investigation of this machine will repay you
We shall be glad to furnish complete data upon request

The Taylor & Fenn Co.

Hartford, Conn., U. S. A.

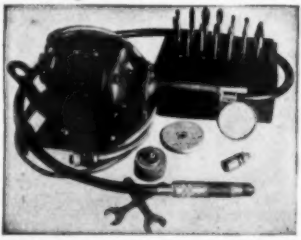
Thor Portable Electric Drills

More Power!

Because from its Spindle End to its Grip Handle the Thor is built of rugged, easy running parts. Many have been used for months without being touched for repairs. And you'll find a drill built by these Thor standards for any job no matter how different or unusual. Pick the one that fits your work from 64 different types and sizes. Direct or alternating current. 3-16 to 2 inch capacity. Jacobs Chucks are regular equipment. *Send for complete catalog.*

Independent Pneumatic Tool Co.
600 West Jackson Blvd., CHICAGO, ILL.

30-Day Offer On the Pattern Maker's Pal



Consisting of

¼ h. p. Westinghouse motor
No. 5x4' shaft
No. 5x4' sheath
Can of grease
No. 5 handpiece with two wrenches
Super service drop cord and switch
14 Burs in block
Grinding spindle
3" Grinding wheel
Sanding drum

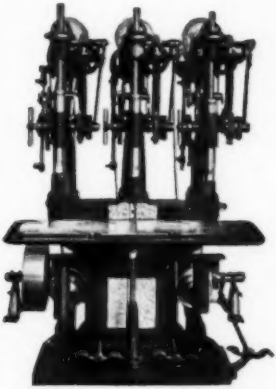
Regular price of 110 volt, a. c., 3450 r. p. m. outfit is $75. Our special 30-day offer at..... $63.

Regular price of 110 volt, a. c., 1725 r. p. m. outfit is $70. Our special 30-day offer at..... $60.

Only 65 sets at these prices. First come, first served.

The Hergi Mfg. Co., 250 Fifth Street, Bridgeport, Conn.

The Rockford Automatic GANG DRILLING MACHINE



Superior Drilling Equipment

"—the utmost value for your money."

It's a Combination of our improved design, the best materials and highest class of workmanship. Operators have no difficulty in obtaining and maintaining the greatest accuracy.

Automatic Return—When each spindle has completed its operation it automatically returns to its highest position, where it remains until the starting lever is tripped, when it immediately drops to position above the work.

By Removal of the stop pin in the cam, the spindle will immediately return to lowest position above work, and when tripped by automatic stop, will return to highest position and immediately drop again to work, repeating the movement automatically until the power is shut off. The spindle can be pulled ahead of the feed while in operation, a great advantage in drilling through a cored piece, piping or similar work.

Built with 2, 3, 4 and 6 Spindles—Box Column Type

Ask for Circular. Glad to answer questions

Rockford Drilling Machine Co.

Rockford, Illinois

THE TITAN

Quick Change Chuck

Has all the good features of other chucks of this type, plus "quick change." Simply strike end of drill, and out it comes. Saves time and cuts costs.

The "Titan" may be operated in any position, even for inverted drilling.

The broken tang collet gives a positive drive to drills with broken tangs.

Made in sizes No. 0 to No. 5 for any taper shank drill, counterbore, reamer or similar tool.

Write for descriptive price list

Titan Tool Company
Erie, Penna.

Multiple Drilling

On a Single Spindle Drilling Machine

Do your multiple drilling in any pattern on a single spindle drill, with a

U. S. Multiple Spindle Drill Head

Made regularly with 2 to 6 adjustable spindles. Special heads to order, with adjustable or fixed spindles.

May we help you?

The United States Drill Head Co.
1952 W. Sixth St., Cincinnati, Ohio

NATCO

Straight Shank
Adjustable
Holders

Economy
Convenience
Durability

Write for Circular

The
National Automatic Tool Co.
Richmond, Indiana

"Utility" Interchangeable

Counterbore and Spot Facer

With the Pilo that *cannot* twist off

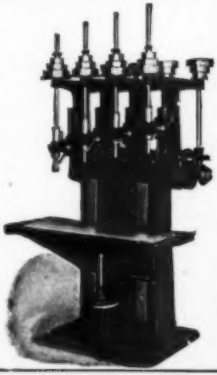
Pilots don't break.
Cutters don't break.
Cutters are easily removed from holders.
Set screws don't come loose.
Cutter drive is simple and powerful.
Counterbore and spot facer troubles practically eliminated.
If you're interested in economy, send for the Catalog. You'll be glad you did.

The J. C. Glenzer Company
6469 Epworth Boulevard
DETROIT, MICH.

Substantial Sensitive Drills

Overhang 7"
Capacity ½"-⅝"

Note width of table bearings and large base



FRANCIS REED CO.
43 Hammond St.,
WORCESTER, MASS.

"WHITNEY"
Silent Chain Drives

Look at this carefully!

In the circle is a "WHITNEY" Silent Chain. It is doing the work formerly done by the obsolete engine and drive below—at lower cost and continuous, uninterrupted use.

NEED WE SAY MORE?
Let our engineers fit the Drive to the job

THE WHITNEY MFG. CO., - HARTFORD, CONN.

Sales and Engineering Offices

NEW YORK, L. C. Biglow & Co., Inc., 243 West 55th St.; BOSTON, George C. Steil, 740 Commonwealth Ave.; PHILADELPHIA, R. J. Howison, 624 Race St.; PITTSBURGH, Pittsburgh Gear & Machine Co., 27th & Smallman Sts.; SAN FRANCISCO, A. H. Coates Co., Industrial Drive & Equipment Co., 615 Howard St.; SEATTLE, A. H. Coates Co., 1115 East Union St.

Chains and Sprockets for Power Transmission

"Borgeson Universal Joints"

Are you a user of Universal Joints?
If so!

Remember well and bear in mind that a good Universal Joint is hard to find. But if you want one tried and true, you will want the "Borgeson" before you are through.

You will become not only a "Buyer" but a "Booster" for "Borgeson."

SIZES: ⅜, ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1½, 1¾, 2, 2½, 2⅝.

Should you require Special Universal Joints, be sure to write for quotation.

Complete description gladly furnished upon request

The Borgeson Mfg. Co., Inc.
Torrington, Conn.

Vanderbeek Giant Joints

Efficient to an angle of 45 degrees

Vanderbeek Universal Ball Joints

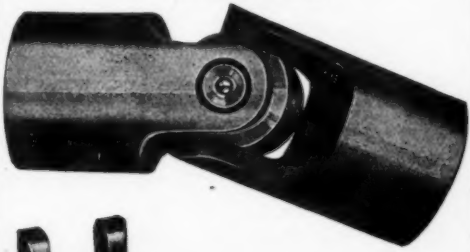
Tested by Time

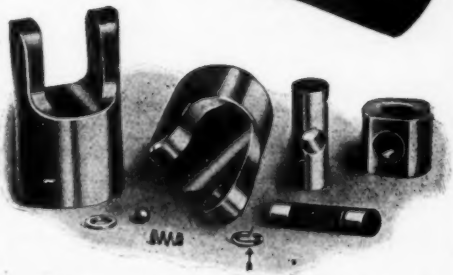
Used by U. S. Gov't. and Best Shops

These joints are entirely enclosed against dirt, are self-oiling, have all wearing contacts of hardened steel of large diameters, and designed for the most severe strain.

American Tool Works, Inc.
Hartford, Conn.

CURTIS
Universal Joints
Unequalled





This joint is simple in construction, accurately machined, and rigidly inspected.

Actual tests have proven the superiority of the CURTIS JOINT.

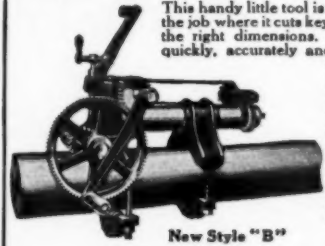
Made in all sizes from ⅜ to 4" diameter inclusive.

Send for special circular.

BOSTON GEAR WORKS
SALES CO.
Norfolk Downs, Quincy, Mass.

20 Distributing Points In The United States

A Strong Portable Key-Way Cutter



New Style "B"

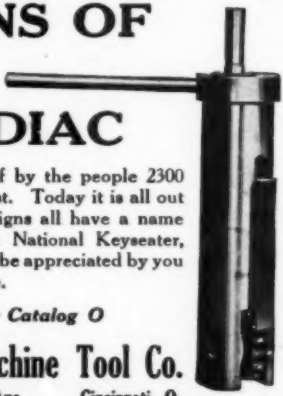
This handy little tool is easily taken right to the job where it cuts key-ways of just exactly the right dimensions. It does the work quickly, accurately and at minimum cost, saving labor and money. Just clamp the tool to the shaft and turn the crank.

Style "B" has six milling cutters and cuts keyways from ¼" to 2" wide, in shafting 2" to 8" in diam. and 12" long without resetting.

Write for prices and literature illustrating and describing several models, including motor driven machines.

THE BUCHER-SMITH CO.
East Liverpool, Ohio

SIGNS OF THE ZODIAC



Highly thought of by the people 2300 years before Christ. Today it is all out of gear. These signs all have a name the same as the National Keyseater, and this tool will be appreciated by you when you get one.

Ask for Catalog O

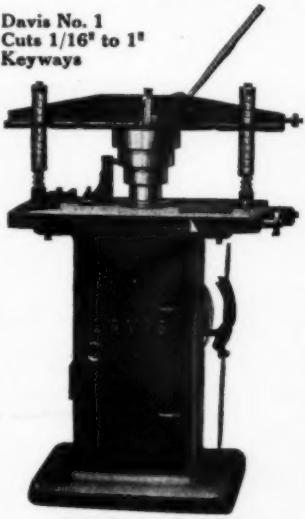
National Machine Tool Co.
2268 Spring Grove Ave., Cincinnati, O.

THE

DAVIS KEYSEATER

The Kind You'll Like

Davis No. 1
Cuts 1/16" to 1"
Keyways



Cutting Keyway in Cone Pulley

For cutting keyways in pulleys, gear blanks, bell cranks, crank handles, etc., etc., and for slotting, oil grooving and work of similar character

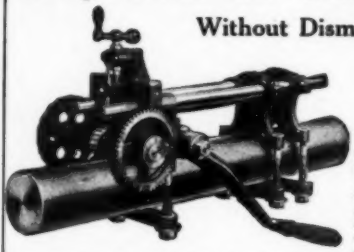
THE DAVIS is just the kind of machine you'll like. It's simply constructed, has no complicated parts—any bright boy can handle it—and it's a big producer. It's also a versatile machine—performs many operations besides keyseating. Our folder describes it fully, with a table of cutting time that will interest you. We want to send you a copy. Will you say the word?

Davis Keyseater Company

255½ Mill St., Rochester, N. Y., U. S. A.

Keyseats In Shafting

Without Dismantling



The BURR Portable Keyseater

Cuts accurate keyways up to 12" long anywhere, in any position, in shafts up to 5" diam. Often saves its cost on a single emergency job. Seven sizes, hand or motor driven.

Over 9,000 already in use—order yours today

JOHN T. BURR & SON

422 Kent Ave., Brooklyn, N. Y.

Patented Jan. 30, 1917

Type 6

"Autex" Extension Reel

Rapidly finding a place in the largest industrial plants, machine shops, service stations, etc., in the U. S. Used for both electric lamp and power extensions.

Approved by Underwriters

Write for descriptive circular

The Cincinnati Specialty Mfg. Co., Inc.

1903 Powers St., Cincinnati, Ohio

A Catlin Speeds Up Keyseating

It breaks records in practically every shop where it is installed. In one place, and when no attempt was being made to establish a new record, the "Catlin" cut in 20 minutes keyseats 2½" long, ½" wide and ¼" deep in 20 mitre gears of 8" diam.

Favor us with your inquiry. We shall be glad to mail the interesting folder and answer questions.

At another time it cut in three minutes, a keyseat 6" long, 1" wide and 7/16" deep in a cast steel hub. These are merely examples of its productiveness under ordinary shop conditions.

Catlins are simplicity itself as they contain less than half the number of parts of other keyseaters. This makes it easy for ordinary help to run them at full capacity. The picture shows our No. 1, belt driven, with three-step cone pulley. We also make three other sizes of keyseaters — all cost reducers. Investigate.

Chattanooga Machinery Company

2401 Bennett Ave., Chattanooga, Tenn.

Broaching Presses

We make a big variety of presses for

Broaching

Any tons capacity
Any speed that may be wanted

Write for circulars and information
Tell us about your requirements

(The man in the picture is broaching 2,500 bushings per day)

Lourie Mfg. Co.

Springfield, Ill.

Atlas Arbor Presses

For All Forcing Operations

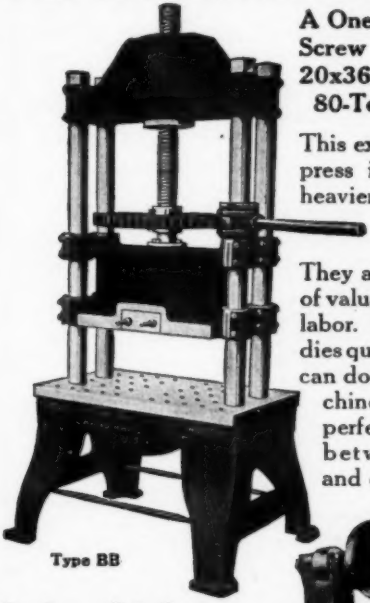
Illustration shows our No. 55 Power Drive Press, which is adaptable for fast production work and capable of supplying ten tons pressure.

Write for our Bulletin—
showing 30 different sizes

Atlas Press Co.

Department B,
Kalamazoo, Michigan

The Die Maker's Friend—



Type BB

A One-Man 4-Post Screw Press with 20x36 Table and 80-Ton Pressure

This extremely rigid press is made for heavier work than our three smaller sizes. They all save hours of valuable time and labor. One man fits dies quicker than two can do on other machines. They give perfect alignment between punch and die.

Surface Grinder

Powerful—rigid—accurate—no vibration--no noise--a revelation in quiet efficiency. Graduated feeds.

Details and prices for a postal

JARECKI MACHINE AND TOOL CO.

Successor to Manhattan Machine & Tool Works

Dept. A. GRAND RAPIDS, MICH.

American 18" Vertical Broaching and Assembling Press

ONLY $475

Pressure, up to 6 to 8 tons.

Maximum stroke, 18 inches.

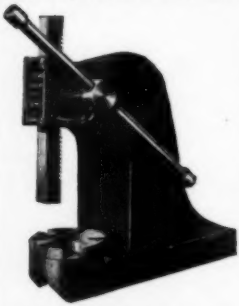
Floor space, 4½ ft. square.

A thoroughly efficient machine, of simple construction, sold at a moderate price, which will do your broaching quickly, economically and satisfactorily.

Write for full details

American Broach and Machine Co.
Ann Arbor, Michigan

Sheldon Arbor Presses



Semi-Steel Frames.

Alloy-Steel Rams and Pinions. Heat Treated.

Large Stub Teeth.

Square Rams, carefully fitted, insuring proper alignment.

Ask for complete catalogue and price list

SHELDON MACHINE COMPANY
403 East 29th Street, CHICAGO, ILL.

The Old Way

Results in damaged shafts, bushings, pins and other parts, as well as accidents to the workmen.

With Nicholson Arbor Presses

all of these losses and accidents are eliminated, and considerable money is saved. Made in five sizes that take work up to 20" in diameter and 31" high and exerting pressures up to 9,000 lbs. Can make immediate delivery on all sizes and will be glad to send any size on trial.

Nicholson Expanding Mandrels

Save space—A set of nine does the work of several hundred solid mandrels.

Save time—Instantly fit any hole round or square, from ½" to 7".

Save labor—No need to caliper a dozen or so solid mandrels, or turn one down to fit certain job.

Write for literature and 30-day trial plan

W. H. Nicholson & Co.

117 Oregon St., Wilkes-Barre, Pa.

Balancing Ways

Anderson Improved are Always Ready

Made in six sizes for balancing anything that turns on a shaft, up to 24,000 lbs.—pulleys, gin brushes, turbine rotars, crank shafts, polishing wheels, fly wheels, etc.; also for testing straightness of shafts, crank shafts, etc. No centers required; no leveling. Always ready and accurate; very sensitive.

"Swing"	20"	40"	60"	72"	96"	72"
Greatest distance bet. standards	20"	30"	30"	66"	88"	20'
Capacity in lbs.	1000	2000	2000	5000	10000	24000
Approx. shipping weight	45	90	150	350	650	
Code	Bend	Bid	Bis	Bib	Ben	

Any of above can be furnished with longer shafts

Anderson Bros. Mfg. Co.

1915 Kishwaukee St., Rockford, Ill.

For Sure Balance--

an absolutely level and solid "Way" is necessary

Bowsher "Balancing Ways"

are brought to an absolute *level* in ten seconds. No revolving parts.

The edges or "knives" upon which the work is tested are ground *true*, and are mounted upon the planed "ways" of a heavy bed or frame.

Standards adjustable to suit length of arbor.

Three sizes for floor—one for bench use

Send for Catalog "F"

The N. P. Bowsher Co., South Bend, Ind.

"Better Equipment Saves Money—"

That is why you should install the

"Rarefied" Dust Collector

—often saves 40% in power;

—repair costs are practically nil;

—successful with all kinds of dust;

—operated on partial vacuum principle;

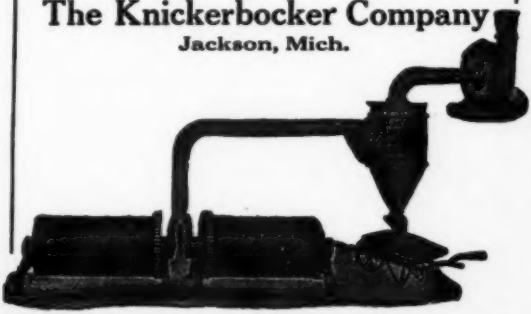
—has made good in some of the biggest plants in the country—one is now using thirty-four!

List of big users—our explanatory booklet—an estimate by our experienced engineers—all gladly furnished on request. And it places you under no obligation whatever.

Draw up your chair and let's talk it over

The Knickerbocker Company

Jackson, Mich.



Compact—Sensitive—Accurate—Durable

The "ATLAS JUNIOR" INDICATOR

Reads over a range of 0.055"—at a glance. Dial may be set at zero after adjusting to work. Contact point can be locked in position for inspecting. Keep it in your pocket and use it anywhere. Details?

PRICE $7.50

Sold by Dealers or Direct

WALLACE BROS.

160 N. Wells St., *Dept. B.B.* CHICAGO, ILL.

FEDERAL
DIAL COMPARATOR

DESIGNED FOR

The rapid checking of parts to close limits by unskilled labor.

Furnished with Indicators graduated .001"—.0005"—.0001".

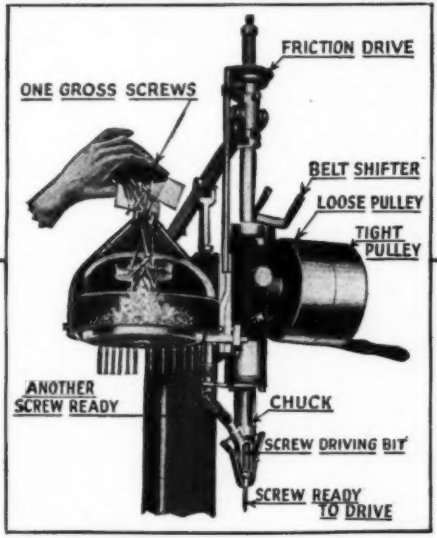
Does what an Amplifying Machine will do and costs less than half as much.

Send for our complete catalog of Dial Indicators, Cylinder Gauges, Comparators, Thickness Gauges, Piston Gauges, Rubber Gauges, Piston Pin Gauges, Fabric Gauges, Paper Gauges, Wire Gauges, Piston Ring Gauges, Thread Lead Gauges.

Federal Products Corporation

Elbow & Chestnut Sts., Providence, R. I.

Lowest-Cost Screw Driving



With MAGAZINE-FED Machines

The above picture clearly shows the magazine feed. Just throw a gross of screws into the hopper, and the "Reynolds" automatically magazines and drives them.

Is it any wonder that it saves 65 to 85 per cent of the cost of driving screws by any other machine or method?

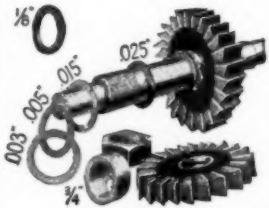
No matter what kind of screws you use, let us know their length and gauge, with dimensions over all of your work, and we'll submit an interesting proposition.

The Reynolds Machine Company

Dept. H. H., Massillon, Ohio

Steel Spacing Washers—

Made of Cold Rolled Steel, at less than half the cost of making them for yourself



Stock sizes for arbors of following diameters: 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 5/8, 1 3/4, 1 7/8, 2, 2 1/4, 2 1/2, 3, 3 1/2 and 4 in. and larger.

Stock thicknesses: .002, .003, .004, .005, .006, .007, .008, .010, .012, .015, .020, .025, .032, .047, .063, .093 and .125 inch.

Other thicknesses up to 3.000" made to order, with keyways if so ordered.

Ask us to send samples; you'll like them

Detroit Stamping Company

3443 West Fort St., Detroit, Mich.

T.H.L. Front Lever Bench Punch

Malleable iron body; working parts hardened. Steel shaft and plunger. Die cannot lose alignment with punch. All parts interchangeable. Built for hardest, toughest work.

PRICE $50

Extra Punches, 20 cents each; extra dies, 30 cents.

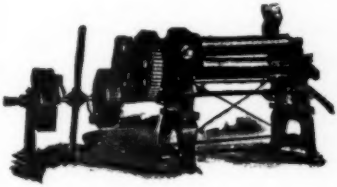
Capacity 13/32" thru 1/4" steel, 11/32" thru 5/16". Punches up to 1/2". Weight, 70 lbs.

A good buy; can ship promptly

T. H. LEWTHWAITE MACHINE CO.

(Est. 1890)

417 E. 31st St., NEW YORK



BELOIT

INITIAL TYPE

Sheet & Plate Bending Rolls

The Beloit Initial, or side bending, type roll has been designed to meet the demand for a strong, efficient, quick acting roll for use where the heavier Pyramid Type is not required. It is especially adaptable for use in shops handling sheet metal and for the lighter class of work in Boiler Shops, such as stacks, breeching small tanks, and the like.

The upper roll is geared to the adjustable lower roll thus pinching the plate, while the idle roll, which is also adjustable, does the bending. The outer housing is hinged and the upper roll is raised by throwing a cam lever, thus permitting the removal of sheets bent to a full circle. All styles of these rolls are double back geared and require a minimum amount of power.

Built in twenty-six sizes with capacities up to 5/16" and from 14" to 98" between housings.

HENDLEY & WHITTEMORE CO.

100 S. State St., BELOIT, WIS.

Our New No. 7 Roller Bearing Punch

Something Better—A Real Bargain

Capacity, 1/4" thru 1/8"; 1 3/4" throat and 1/2" gap; length, 18"; punches to center of 3 1/2"; weight, 6 1/2 lbs. Furnished with 5/32, 7/32 and 9/32 punches and dies. Our old No. 7 was good, but this is far superior and works 40% easier. And the price is right, too.

Shall we mail you one—or the literature?

Whitney Metal Tool Co.

95 Forbes Street, Rockford, Ill.

Style "WC"

Style "O"

The Hinge

Style "G"

Style "A"

Gits Gravity and Wire Wick Feed Oilers

Gravity Feed—flushes the bearing.
Wire Wick Feed—gives desired prolonged feed.
Wire Wick—replaces waste or felt.
Made in Standard sizes.

Style "L"

Write for Catalog No. 20

Showing 255 full size illustrations with detail dimensions.

GITS OIL CUPS

Style "U"

Oil cups for every lubricating need. State style and size in which you are interested, and we will send free samples and catalog.

Style "T"

GITS BROS. MFG. CO

1940 So. KILBOURN AVE., CHICAGO

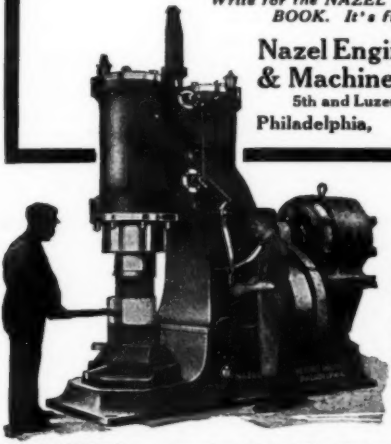
Economy—

If it's a *Nazel Air Hammer*

you secure greater economy than in hammers operated from an independent air supply, for in hammers so worked, the full pressure must be constantly produced, and wherever less than the full pressure is required in the hammer cylinder, the difference is wasted by throttling at the valves. With the Nazel, only the actual air required in each instance is produced, and when hammer stands idle the power cost ceases.

Write for the NAZEL HAMMER BOOK. It's free

Nazel Engineering & Machine Works
5th and Luzerne Sts.
Philadelphia, Penna.



Built in three types, Six Sizes, Belt or Motor Driven, with capacities up to 7" square for all kinds of machine, railroad and general forging.

NAZEL HAMMERS require no storage tanks, independent compressors or piping

Jacobs Chucks

Taylor-Shantz Friction Driven Bench

A Simple, Durable, Efficient Machi
Capacity, 0" to 5/16" in All Metal

Users have found the Taylor-Shantz Bench Tapper most satisfactory, and they are the ones who count. They report that it taps rapidly and accurately, and they like the arrangement of a leather-faced friction disc, which reduces to a minimum the danger of broken taps.

Write for further part

TAYLOR-SHANTZ COMPANY, 478-486 S

This advertisement is p
interests of good Drilling
by the makers of the Jac

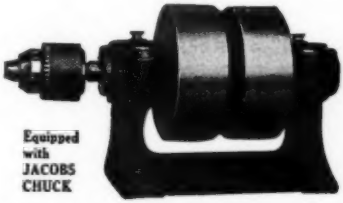
Jacobs Chucks m

acobs Chucks

ench Tapping Machine—

t Machine at a Reasonable Price
ll Metals of Medium Thickness

ch Tap-
nes who
and ac-
nt of a
es a



Equipped
with
JACOBS
CHUCK

her particulars to—

78-486 St. Paul St., ROCHESTER, N. Y.

t's published in the
Drilling Equipment
e Jacobs Chuck

hucks make good tools better

Nos. 1, 2 & 5

When All Is Said

and done, you cannot beat our line of tools for cutting sheet, bar or round rods in iron or mild steels.

You can use our line of

Hercules' Shears and Rod Cutters

For cutting card, straw and fibre boards, brass and copper, gold and silver sheets, and hard rubber compositions.

Plain Shears Nos. 3 & 4

Catalog No. 2 on request.

W. C. & F. C. TUCKER

HARTFORD, CONN.

Over 100 Shapes and Sizes of

Armstrong Tool Holders

SAVE h. s. Steel, 90%; Grinding, 70%; Forging, 100%

STRAIGHT SHANK TURNING TOOL

We also make—all of Armstrong quality—

Ratchet Drills	Lathe Dogs	Bolt Drivers
Drilling Posts	Clamps	Tool Posts
Drill Drifts	Wrenches	Drill Sleeves
Drill Vises	Planer Jacks	and Sockets

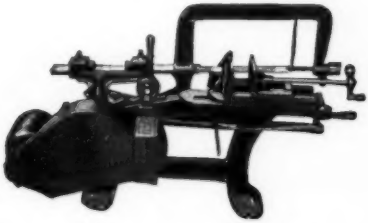
Glady to mail you the Catalogs; write for them

Armstrong Bros. Tool Co.

"THE TOOL HOLDER PEOPLE"

308 N. Francisco Ave., Chicago

A Complete Motor Driven Hack Saw at a very attractive price. It's a Strong, Durable, Dependable Saw, and can be furnished either with motor for power circuit for stationary use, or with motor for lighting circuit so can run from any light socket in your shop. Write us. Let us know the current of your power circuit, or lighting circuit. Get the full details from us of this Complete Motor Driven Saw.



Marvel Draw-Cut Hack Saw No. 2

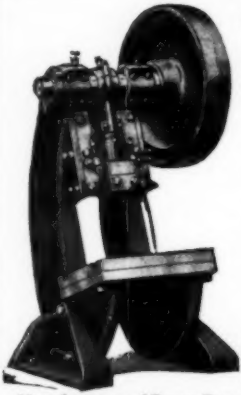
Adjustable Stroke

CAPACITY { 6"x6" on long stroke
8"x8" on short stroke

With Swivel Vise

Motor is connected with driving shaft by silent chain, sprockets, and intermediate cut gears enclosed in cast iron housing and guard and run in oil.

ARMSTRONG-BLUM MFG. CO.
341 N. Francisco Ave., CHICAGO, ILL.



Trade **Verson** Mark

Punch Presses

For Accurate Work

Ask your dealer to show you the "**Verson**" Line of Power Presses, or write direct for circulars.

La Salle Machine Works

3013 S. La Salle St., Chicago, Ill.

Manufacturers of Power Presses, Angle Shears and Dies

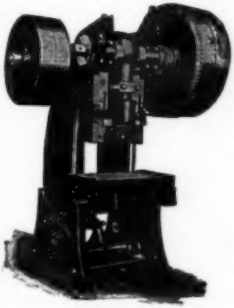
SOMETHING NEW

Hand Power Presses, Shears, Notchers, Punches and Dies, Etc.

Write for Booklet

J. F. Kidder Mfg. Co., Burlington, Vt.

A Quality Inclinable Press Backed by a Real Guarantee



A Loshbough - Jordan Press cannot be overloaded while operating within its rated speed. Any shaft or frame broken under these conditions and within year of purchase will be replaced gratis.

Many features for convenience and safety of operator; long, satisfactory service; quality and volume of output excellent.

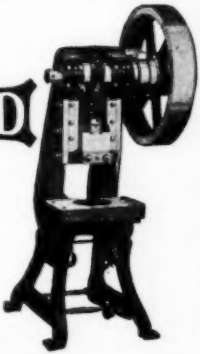
Let us tell you about them —or better, let us send a press on 30 days' trial.

Loshbough - Jordan Tool & Machine Co.
Elkhart, Ind.

The Only Difference

is not just price. The big thing is **service.** An investigation of the merits of

HIGH DUTY
ROCKFORD
PUNCH PRESSES



will give you a new idea of what you should get in punch press service. Definite, dependable reliability under all working conditions.

Write today for complete construction details.

Rockford Iron Works
ROCKFORD, ILL.

The Economy of Peter's Metal Cutter is

75% Greater than Hack Saw or File

Always ready to make a thin, smooth, square cut in hard steel, forming tools, drills, reamers; also tubes, rods and bars of copper, brass and aluminum. Cuts h. s. steel without burning or drawing of temper.

8" Size $22.50, with C. S.
Splendid for tool room. Cuts all high-speed steel up to 5/8" square.

12" Size $60, with C. S.
Cuts up to 2¼" diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.

"QUICKWORK"

(TRADE-MARK REGISTERED THROUGHOUT THE WORLD)

ROTARY SHEARS

MADE IN VARIOUS SIZES AND STYLES

For cutting all gauges of sheet and plate up to 1 inch thick used in building Ships, Boilers, Cars, Tanks and General Plate and Sheet Metal Work. Cut square or beveled edges in straight or irregular shapes, also cut rings and discs, and cut openings without starting in from side of sheet. Leaves the metal flatter than any other Rotary or Short Straight-Bladed Shear. Cuts a clean edge that requires no finishing.

Joggling and flanging rolls can be used interchangeably with the cutters.

Do Long Straight Cutting Faster Than Any Other Shear of Any Kind

One "QUICKWORK" does the work of a number of old style machines Does it better and from two to ten times quicker

Eliminate Oxy-acetylene Cutting and Plate Planing

WRITE FOR CATALOG NO. 60

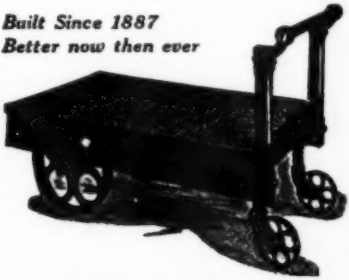
THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.

Cable Address: "QUICKWORK." All standard codes used.
New York Exhibit: Grand Central Palace.
Agent for British Isles: Oliver Machinery Co., Manchester, England.

I Pay 500% Annual Dividends

You Can Prove It Yourself

Built Since 1887
Better now then ever



I am the

TOWSLEY TRUCK

I am made in all styles and sizes to meet every requirement.

TAKE A PENCIL and do a little simple figuring. Make your own estimate of how much labor is saved each time a truck is used. Multiply this by the approximate number of times it is employed per day, and this, again, by the labor cost per hour, and you can easily estimate the saving for a month or a year.

EFFICIENCY ENGINEERS have figured this out with great care, and they say that the average truck pays for itself every two or three months, ***earning about 500% a year.***

I, the Towsley Truck,

—am such a good truck, because my makers believe that anything which earns 500% a year deserves to be well made. They believe it is economy to build me the best they know how—not to sell at a price, but to last the longest, to give the best service, and to earn the largest dividends. And that is why I have been adopted in so many plants as their standard truck equipment.

Write to my makers. Tell them your requirements. Let them help you make money. They are the—

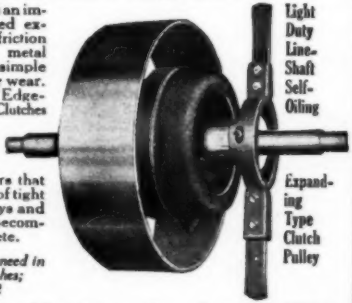
John T. Towsley Mfg. Co.

1036 Woodrow St., Cincinnati, Ohio

Edgemont Friction Clutches
For All Purposes

This clutch has an improved patented expanding type friction with metal to metal contact, with simple adjustments for wear. The value of "Edgemont" Friction Clutches on line shaft has been so universally acknowledged by mill operators that the old system of tight and loose pulleys and belt shifting is becoming quite obsolete.

Tell us what you need in Friction Clutches; we have it



Light Duty Line-Shaft Self-Oiling

Expanding Type Clutch Pulley

Edgemont Machine Co., Inc., DAYTON, OHIO

Save Time
Setting Gang Milling Cutters

Eliminate Thin Washers

Hardened and Ground

PATENTED

"Wear-Ever" Adjustable Spacing Collars permit setting cutters to the thousandth part of an inch without removing from the arbor.

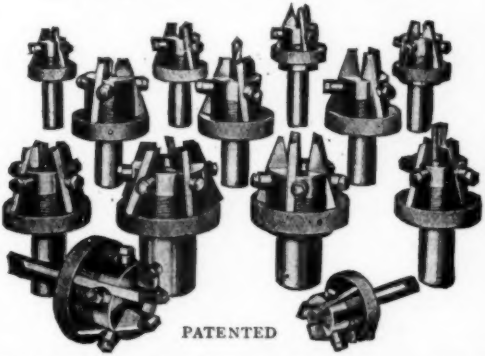
Stock sizes for ¾" to 2½" arbors, sent on approval They are adjustable in 12 steps of 2/1000 inches

SCULLY-JONES & CO. *TOOL DIVISION*
13th and Robey Streets **CHICAGO, ILL.**

The Adjustable Blades of

Genesee Hollow Mills

Are Replaceable at Nominal Cost



Save Tool Cost—Save Operating Cost—Increase Output

ONE Genesee Hollow Mill covers the range of several solid mills, with adjustments to the thousandth of an inch.

FOURTEEN sizes cover the entire range from ¼" to 2", which would require hundreds of solid tools.

ONE set of blades outlasts three to five solid tools, and may then be replaced at nominal cost.

GENESEE Hollow mills cut up to 15" a minute in steel. They are stronger than solid tools and cannot change in size.

IDEAL for finishing castings, forgings, etc., and more economical than non-adjustable mills for every purpose.

Consult freely with us for economical milling production

Genesee Manufacturing Co., Inc.

Rochester, N. Y., U. S. A.

Manufacturers of Genesee Rapid Production Tools

— any Machinery to be Moved?

If you have any heavy stuff to move in your shop, you cannot do better than to install

The CanTon Crane, Hoist and Truck —

because it enables one man to do the lifting and lugging of 6 to 10 men. And it's all done *safely*.

SEVERAL SIZES

Write for Booklet E-8

Canton Foundry and Machine Co.

Canton, Ohio

New York Office: 203 East 15th Street, Second Floor

Tools and Patterns

By Albert A. Dowd, Consulting Engineer

A survey of materials, tools and fundamental processes of pattern making.

CHAPTER HEADINGS

Hand and Forged Tools.
Drop Forging.
and Blanking Dies.
Drilling, Boring, Reaming.
Turning, Forming, Threading.
Milling and Planing.
Broaching.
Surface and Cylindrical Grinding.
Shop Equipment.
Milling Fixtures.
Generating & Forming Attach.
Fixtures and Jigs.
Lubrication of Cutting Tools.
Cutting Feeds and Speeds.
Planning and Layout.
Estimating Costs.
Internal, External and Thread Gauges.
Profile & Indicating Gauges.
Patterns.
Face Plate Fixtures Patterns.

434 Pages, 5½x7¼ Inches, Flexible Binding

PRICE $6, POST PAID

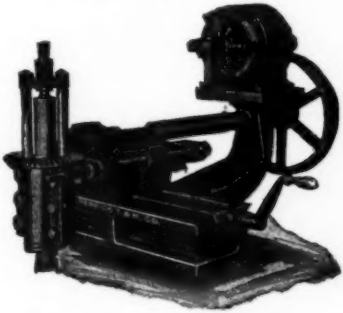
Hitchcock's Machine Tool Blue Book

1235 Caxton Bldg., Chicago

Without a **Pedrick**

Portable Milling Machine

You Often Pay Its Price
In Delay On One Job



To appreciate its value just add the savings you could effect in a year by taking this handy, ever-ready tool to the job instead of bringing the job to the tool, then subtract the price. Result—net earning power.

You need this Pedrick Miller to do those big jobs that your standard machines cannot handle.

Catalogue explains all its various operations—a comprehensive book of reference and key to manifold savings. Your copy is waiting—shall we send it now?

Pedrick Tool & Machine Co.

Headquarters for Portable Machine Tools
Boring Bars, Crank Pin Turners, Pipe Benders, etc.

3644 N. Lawrence St., Philadelphia, Pa.

Weigel Single-Wheel "Kwality Kaster"

Will not crush or break. Swivels on steel machined rollers. The best single caster on the market.

Double-Wheel "Trukaster"

Lasts three times as long as others. Easiest running, strongest, and most durable double-wheel caster made. Has heavy plates and axes.

Write for Price List

THE HAMILTON CASTER & MFG. CO.
HAMILTON, OHIO

HITCHCOCK'S

The Blue Book

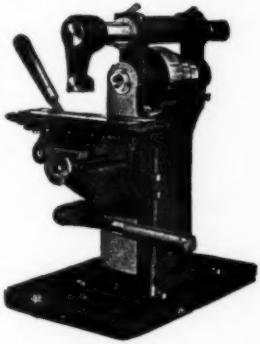
Goes to the Heart of 96% of the Best Plants in the Country

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.

Burke Bench Millers

Hand and Power Feed—$100 to $220

Burke Millers are dependable machines, built to close limits and well balanced. They are accurate, convenient, economical and good producers.

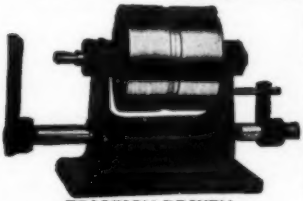


No. 3 Bench Type

Longitudinal Feed 8 inches.
Traverse Feed 3⅛ inches.
Vertical Feed 7½ inches.
Table Surface 3½x12 inches.
Price Bench Type $155.
Price Column Type $171.

Write for complete data

Burke Tapping Machines



FRICTION DRIVEN

Built in three sizes, 3/16 inch at $25, ⅜ inch at $45, and ⅝ inch at $60.

Complete in themselves, and highly efficient for all work within their capacity, yet they cost less than the average tapping attachment.

They increase production 20 or 30 or more to one over hand tapping, and do it easy without breaking taps. Let us send you a machine on 10 days' trial, to prove that it will do all we claim for it. Write today, if convenient.

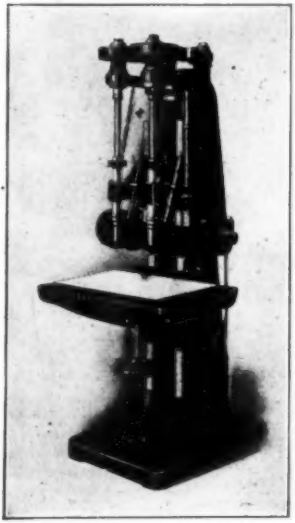
The Burke Machine Tool Co.

297 East 16th Street, Conneaut, Ohio

Modernize your Drilling Equipment with

The VIKTOR A New Type of Drill Press

With 1 to 8 Spindles



This new departure in drilling machines is the result of a constant demand for something better. Below are some of its features:

More { Production / Speed changes / Feed changes

Less { Floor space / Upkeep expense / Operative cost

Rugged construction
Enclosed mechanism
and Fool-proof
Direct motor drive

You'll find that the VIKTOR will fairly revolutionize your drilling operations. Write for a more detailed description.

The Henry & Wright Mfg. Co.

Hartford, Conn., U. S. A.

Second-Hand Machinery

Lists of Second-Hand Machinery, either For Sale, Wanted or For Exchange, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **$2.50** for name and address. Minimum charge, **$5.00.** No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool Blue Book advertisers.

FOR SALE BY

Botwinik Brothers, - 21 Sylvan Ave., New Haven, Conn.

"Connecticut Machinery Merchants"

PROFILING MACHINES.

150 Pratt & Whitney No. 12 2-spindle profiling machines, complete and as good as new; price $125. each f. o. b. cars, New Haven, Conn.

Write, wire or phone.

FOR SALE BY

O. T. Webb Machinery Co., 510 W. Van Buren St., Chicago, Ill.

Drill, 10"	$ 25.	Punch and shear, No. 10½	$150.
Drill, 15", with tapping attach.	65.	Reboring mche., No. 2 Marvel	65.
Drill, 20"	50.	Shaper, 6"	60.
Drill, 25", with tapping attach.	35.	Shaper, 14"	100.
Lathe, 11"x5'	125.	Shaper, 15"	195.
Lathe, 14"x6'	125.	Shear, alligator, capacity 1½" round	275.
Punch press, No. 1 R. & K.	95.		

FOR SALE BY

B. H. Dillon, Receiver, - Box 906, Portsmouth, Ohio

Boring mill, 2-spdl. vertical, Baker No. 3.
Boring and facing mill, double end, Beaman & Smith heavy duty.
Broach, LaPointe No. 3.
Drill, Colburn heavy duty.
Drill, Baush 8-spindle multi drill.
Hammer, 150 lb. Bradley, upright.
Furnace, hardening and annealing, Tate-Jones, gas.
Lathe, turret, 22" Libby.
Lathe, 6-turret Hartness, fully equipped for bar and chuck work.
Miller, Hendey, Lincoln type.
Miller, Ingersoll planer type, 2 side, 2 top heads.

All kinds metal working machinery, small tools, etc. Your inquiries solicited.

FOR SALE BY

Louis E. Emerman & Company, 1761 Elston Ave., Chicago, Ill.

Bending brake, Chicago, capacity ⅛"x6', motor driven	$ 850.
Drill presses, Kern 42", brand new	575.
Drill, multiple, Natco No. 30, 20"x40" head, 48 spindles	1150.
Drill, multiple, Natco No. 32, 20"x54" head, 42—1½" spindles	1250.
Gear cutter, Brown & Sharpe No. 4, 36" capacity	450.
Gear generator, Gleason 11"	575.
Gear hobber, Newark No. 2	350.
Hack saw, Peerless 9"x9", motor driven	325.
Lathes, Cleveland 12"x4½', brand new	450.
Lathes, Gisholt 20" automatic turret	1750.
Planer, 24"x24"x8' Gray, single head	775.
Planer, 84"x84"x32' Putnam, 4 heads, with motor	4250.
Punch and shear, Williams-White No. 14, double end	1250.
Radial drills, Bickford 2½', single pulley drive	550.
Radial drill, Morris 3', single pulley drive	600.
Squaring shear, Long & Allstatter No. 4, ½" plate	850.
Welder, Wilson, two arc, complete	900.

SECOND-HAND MACHINERY

FOR SALE BY

Royal Piston Ring Co., Inc., - - - Bath, N. Y

Grinder, No. 14 Gardner double disc.
Grinder, No 20 Heald rotary, 8" magnetic chuck.
Lathe. 16"x8' Rockford.
Millers, U. S. hand (2).

FOR SALE BY

Tubor, Velick & Co., Inc., - - 628-630 W. Lake St., Chicago, Ill.

Telephones: Monroe 4199-6813. No Branches

PUNCH PRESSES.

No. 2 Walsh.
No. 4 Walsh, (5).
No. 5 American Can.
No. 4 Rockford.
No. 7 Beatty, cap. 1¼" in 1".
No 15 Torrin Wold
16½ Toledo. 9½" stroke.
No. 17 Williams-White double end punch & shear.
Nos. 13 & 15 single end punches.
No. 15 Kick presses.
Long & Allstatter horn punch, capacity 1½x1.

DRILL PRESSES.

20" b g., p. f., new, $130.
20" Weigel.
26" Hoefer.
14" Excelsior.
Bench type drills, $16.
Baker heavy duty.

MILLING MACHINES.

No. 2 LeBlond.
No. 2 Cincinnati vertical.
No. 3 Kempsmith
No. 2½ Rockford universal.
Kearney & Trecker No. 2-A, single pulley drive.
A number of hand millers.

LATHES.

11"x 5' Sterling.
12"x 5' Worcester, q. c.
14"x6' Prentice.
15"x 5' South Bend.
15"x 8' Sidney, q. c.
16"x 6' Sidney, q. c., (2).
16"x 6' Monarch q c.
16"x 8' Canedy-Otto.
16"x 6' Hendey, q. c., taper att.
16"x 8' South Bend, q. c.
17"x 8' Sidney, q. c.
18"x 8' Chard
19"x10' Sidney, q. c., (2).
20"x 8' Lodge & Shipley, geared head, s. p. drive.
24"x10' Canadian, q. c., d. b. g., (3).
26"x10' Lodge & Shipley, q. c.
27"x14' Sidney, q. c.
Dalton Six.

PLANERS.

24"x24"x6' Pond.
24"x24"x 8' Putnam.
30"x30"x 8' Fitchburg.
36"x36"x 7' Flather, 2 heads.
36"x36"x 8' Cincinnati.

SHAPERS.

14" Flather.
16" Ohio.
16" Queen City.
16" & 20" Whipp, b. g.

SCREW MACHINES.

No. 2 Pratt & Whitney, hand.
Warner & Swasey.
No. 2 Smith, hand.

GRINDERS.

B. & S. universal.
No. 2 Manhattan surface.
No. 14 Besly, disc.
Emery grinders, $2 and up.

WOOD-WORKING MACHINERY

Band saws, 36" Famous, new, (10).
Boring mills. Andrew, (3).
Swing saws, Porter, (4).

MISCELLANEOUS.

Brake, power, 6' Dreis & Krump.
Buffers, U. S. and Westinghouse, 5 h. p., b b
Cold saw. No. 20 Lea-Simplex.
Hack saws.
Lift trucks, Barrett, 1 ton cap.
Motors, a. c. and d. c.
Punch & shear, No. C Cleveland.
Radial drill, 3½' Canedy-Otto.
Radial drill, 3½' Cin'ti Bickford.
Roll, power, 10" roll, capacity ¼" plate.
Time clocks, International.
Woodworking machines.

Leather belting. Pulleys, shafting and hangers.

SECOND-HAND MACHINERY

FOR SALE BY

The Hess Schenck Company, - - Cleveland, Ohio

BORING MILLS.

No. 48 Colburn vertical boring mill, 2 swivel heads.
No. 48 Colburn vertical boring mill, 1 swivel head and 1 turret head.

DRILLS—RADIAL.

4' Hammond sensitive radial drill.

DRILLS—UPRIGHT.

20" Barnes all-geared, (3).
26" Barnes, sliding head, b. g., p. f., a. s.
28" Barnes, sliding hd., b. g. & p. f.
No. 314 sgl. sp. Baker high duty (2).
2-spindle Moline hole hog, 7-D.
4-spindle Moline hole hog, 13-D.
6-spindle Moline hole hog, 66-D.

GRINDERS.

Model B ½x2½ Yankee twist drill.
No. 1 LeBlond univ. tool & cutter.
10x24 Landis universal.
No. 4 Badger disc grinder & press.
No. 6 Bryant chucking grinder.
16x66 Landis, with crankshaft grinding equipment.
24x12x9 Diamond auto. surface.

LATHES.

12"x 5' Hendey, tie bar head, q. c. g., comp. rest, oil pan.
12"x 5' Hendey, tie bar head, q. c. g., taper att., comp. rest, oil pan.
14"x10' Whitcomb-Blaisdell, 3-step cone, d. b. g., q. c. g., comp. rest, oil pan and pump, 12" 4-jaw chuck.
16"x 8' Hamilton, q. c. gear, comp. rest, 12" 4-jaw chuck.
16"x 6' Monarch, q. c. g., double back geared, 8" 4-jaw chuck.
18"x 6' Schumacher & Boye standard lathe, 12" 4-jaw chuck, comp. rest.
26"x10' LeBlond crankshaft lathes, universal type, (2).

MILLING MACHINES.

No. 25 Becker plain, b. g., hor. feed to table, direct connected 1 h. p. 3 phase, 60 cycle, 220 volt mtr., (2).
No. 3 Becker cone type, universal.
No. 2 B. & S. plain, cone type.
No. 2B heavy B. & S., cone type.
No. 2 Garvin duplex.
Cincinnati, Lincoln type, semi-auto., table 11x51.
No. 2 B. & S. univ. cone type miller.
No. 13 B. & S., Lincoln type.
Hendey, Lincoln type.

PLANERS.

24"x34"x8' Cincinnati, 1 hd. on rail.
42"x36"x8' Gray planer.

SHAPERS.

16" Steptoe crank.
15" Hendey shaper.
16" Hamilton b. g. crank.
16" G. E. back geared crank.
25" Smith & Mills, b. g.

TURRET LATHES AND SCREW MACHINES.

No. 1 Garvin screw machine, ⅝" cap., auto chuck, wire feed, oil pan.
No. 2 B. & O. hand screw machine, auto. chuck, 1" cap., plain head, oil pan.
No. 6 W. & S. screw mchs., p. f. to turret & cross slide, oil pan & pump, (2).
¾x¾ Cleveland, model B.
1½ Gridleys, belt & mtr. dr., a.c., (5).
⅝" No. 52 National Acme.
3x36 J. & L. turret lathe, d. c. to 3 h. p., a. c. motor.
No. 4 W. & S. univ. turret lathe.
No. 55 National Acme, direct connected to a. c. motor.
Fay, equipped for gear blanks, (2).
1½ model A Cleveland, (3).
3½ & 4½ model A Cleveland.

MISCELLANEOUS.

Arc welder, 50 to 300 amp., 70 volts.
Broaches, No. 3 LaPointe, single and double spindle.
Die sinker, No. 2 Pratt & Whitney.
Forging machine, ⅝" Acme, continuous motion.
Forging press, 150-ton high speed steam hydraulic.
Gear cutters, 6" Gleason straight bevel, (2).
Gear cutters, 18" Gleason spiral bevel, with auto. stops, (2).
Hot pressed gear nut mche., 1" Ajax.
Hot pressed gr. nut mche., 1½" Ajax.
Nut burring machine, 1½" Acme, double spindle, semi-auto.
Press, No. 3 Toledo, o. b. i.
Shear, power squaring, 36" Niagara.
Tappers, 6-spindle ⅜" & ⅝" Acme.

SECOND-HAND MACHINERY

FOR SALE BY

Bennett Machinery Co., - 30 Church St., New York City

Drill, radial, 3' Bickford plain.
Lathe, 24"x10' Draper.
Lathe, 26/48"x10' McCabe.
Lathe, 32"x35' Bement Miles.
Lathe, 40"x13' Putnam, triple grd.
Lathe, 16"x 8' Monarch, q. c., t. a.
Pipe machine, 6" Curtis & Curtis.
Planer, 54"x12' Pond, 4 heads.
Planer, plate, 18' Niles.
Shaper, 15" Pratt & Whitney.

FOR SALE BY

Herman L. Winterer, 943-53 N. Front St., Philadelphia, Pa.

LATHES.

43"x17'4½" Bement-Miles.
42"x16' Niles taper att.
37½"x14' Johnson d. b. g., q. c. f., t. a.
32"x12' Pittsburgh, heavy duty, q.c.g.
27"x12' Bullard.
26"x11' Wickes, q. c. g.
22"x10' Niles, q. c. g.,
25"x14' Hendey, q.c.g., taper attachment, oil pan, (2).
24"x14' Porter.
21½"x8' LeBlond.
20"x8'6" Walcott, d. b. g., q. c. g., (2).
20"x 8' Whitcomb Blaisdell, q. c. g.
19"x10' Draper, patent head.
18"x 8' Davis q. c., d. b. g.
18" x 7' Chard, d. b. g., semi q. c. g.
18"x6' to 8' lathes. (6).
16"x 8' Greaves & Klusman, b.g., t.a.
And many others.

TURRET LATHES.

3½x28" Pond, triangle.
3x36" Pratt & Whitney, hollow hex.
20" Acme flat, 2½", h. s. motor drive.
20x7' 6" Pratt & Whitney, back grd.
20x7' Bridgeport, 2½ h. s.
19"x7' Fay & Scott, back grd.
No. 22½ Garvin Monitor.
No. 3 Kempsmith.
14"x 6' Warner & Swasey.
16"x6' Johnson, back grd.
No. 3 Bardons & Oliver back grd.
14½"x5' 3" Pratt & Whitney, (2).
No. 3 Foster Kimball.

DRILL PRESSES.

42" Gang radial, s. p. speed box.
40" Barnes horizontal radials, (2).
36" Bickford radial, circular base, motor driven.
28" Rockford, q. c. g. feed (2).
28" No. 3 Avey high speed, (2).
14" 6-spindle Allen sensitive.
Henry & Wright sensitive.
Plain drills, all sizes.
Drill presses, assorted sizes.

MILLING MACHINES.

38"x6' Ingersoll horizontal slab.
No. 5 Cincinnati, table 9½x50½".
No. 2 Pratt & Whitney die sinker.
No. 15 Garvin, table 12x42".
No. 3 Becker Brainard, table 12x40".
No. 3 Hendey-Norton, q. c. g.
No. 0V Brown & Sharpe plain, (2).
No. 5-C Becker vert., rotary table.
No 5-B Becker vert., table 14x43.
No. 7-H Lincoln type Becker miller.
No. 3½ Fox.

PLANERS AND SHAPERS.

12'x10'x25' Sellers planer, 4 heads.
30"x30"x8' Hewes & Phillips planer.
30"x30"x8' Putnam planer.
26½"x26"x 6' Hendey planer.
24"x24"x6' Sellers planer.
48" Morton draw-cut shaper.
39" Pedrick & Ayer, open side.
26" Cincinnati.
14" Warren shaper.

MISCELLANEOUS.

Band metal saw, 6x6 Napier.
Boring mill, car wheel, 60" Newton.
Boring mill, 36" Baush & Harris vertical, double head.
Boring, drilling and milling machine, 17½' Bement Niles horizontal.
Centering machine, 4" Whiton.
Grinder, 13½"x5' Landis universal.
Grinder, No. 1 Norton universal.
Grinder, disc, No. 17 Besly.
Grinder, disc, No. 1 Besly
Hammer, 15 lb. Bradley helve.
Hammer, 25 lb. Little Giant, m. d.
Hammer, 40 lb. Bradley, helve.
Hammer, 60 lb. Hotchkiss.
Hammers, 60 lb Bellefonte upright, 2
Hammer, 500 lb. Merrill belt drop.
Hammer, 1000 lb. Merrill board drop.
Hammer, 1250 lb. Bell steam.
Keyseaters, 18" stroke Morton, (2).
Punch presses, all sizes. (55).
Punch & shear, Industrial Wks. d.e., capacity ⅝" in ⅝", squaring ⅝"x6".
Slotter, 14" Niles.
Tooth round'g mch., Schuchardt & S.

Large assortment of General Machinery. Send for Complete List.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Co., - 28th St. & A. V. R. R., Pittsburgh, Pa.

LATHES.

50"x49'6" Johnson, triple geared.
46"x17' New Haven, triple geared.
30"x13' New Haven.
28"x14' Putnam, h. s.
26"x12' Pittsburgh, dbl. b. g.
26"x20' 6" Putnam, b. g., c. r.
26"x10'6" Walcott, q. c. g.
24"x16' 6" Johnson lathe.
19"x10' LeBlond, motor drive.
19"x 6' Bullard, c. r., b. g.
18"x 8' Mueller, q. c. g.
18"x 8' Sidney, q. c. g., d. b. g.
16"x 6' Blaisdell, h. s.
16"x 6' Cleveland, q. c. g., new.
16"x 6' South Bend, h. s., t. s.
15"x 8' Schellenbach, d. b. g., h. s.
14"x 7' Hendey, m. d.
16"x 5' Fox turret with chasing bar.
3"x38" J. & L. flat turret.
2½"x24" J. & L. flat turret.
4"x 6' Gisholt tur., 6½" h.s., m.d.
1 "x 7" Acme screw machine.
10"x 4' Blount speed lathe.
12"x48" speed lathe.

PLANERS AND SHAPERS.

24"x24"x 8' Chandler planer.
30"x30"x12' Detrick-H. openside.
32"x32"x 8' New Haven, 1 head.
48"x48"x16'2" Cleveland open side planer, 1 side & 2 rail heads.
48"x48"x22' Pond planer, 4 heads.
120"120"x25' Sellers planer, 4 heads.
16" G. & E., 20" Columbia shapers.
24" Kelly b. g cr. shaper.
24" Queen City, b.g. cr. shaper, m.d.

DRILLS AND BORING MILLS.

20" Champion, new, pl. w. & l.
36" Prentice high speed.
40" New Haven, b. g. drill.
4' Dreses, 4' Bickford radial.
6½' & 8' Pond radial drills.
2½' Canedy-Otto post radial.
1" Champion post drill.
30" W. & S. boring mill.
36" Bridgeport boring mill.
42" & 50" Bullard bor. m., 2 heads.
42" Bullard New Era boring mill.
26",81", 90", 10' Niles bor. mills.
84" Pond boring mill.
Beaman-Smith No. 5 post type hor. boring & drilling machine, spindle 8" dia., floor plate 12'x16'.
Beaman & Smith post type hor. boring mill, 3½" bar, m. d.

PUNCHES, SHEARS, PRESSES AND ROLLS.

King Bridge Co. s. e. punch, 30"thr.
50" throat Reade sgl. end punch and shear; massive construction.
L. & A punch & shs. Nos. 6, 7.
Mahoning punch & shear, 32" thrt.
Plunger type punch & shear, 9" thrt., six ⅝" holes thru ⅝" plate and 6x⅝" at one operation.
Danville portable alligator shear 1½" capacity.
Carlin alligator shear, 1½" capacity.
Carlin alligator shear, 2½", m. d.
Canton alligator shear, 3", m. d.
Garrison plate shear, cap. ¾"x81", m.d.
Waterbury-Farrel rotary sh., 14" thr.
Hilles & Jones gate shear, capacity 84x½", motor drive.
Pusey-Jones guillotine shear, 3"cap.
Niagara pr. sq. shears., 36".
Cleveland sq. shear, 120"x3/16".
No. 56 dbl. housing knuckle press.
Double acting drawing press, 3½" stroke.
Stiles No. 2 inclinable press.
Baird No. 1 foot power presses.
Baird Nos. 3 & 1 open back presses.
Z. & H. inc. press.
Straight-side punch press, ⅝" str.

MISCELLANEOUS.

Air compressors: Chicago 19x12x14; Chicago 9"x11".
Blowers, Buffalo No. 8 vol.; Sturtevant No. 8.
Bulldozer, W.-W. No. 2.
Cold saw, Wagner, size 18 type 3.
Cranes, portable 2 ton.
Engine, gas, 15 h. p. Fenner.
Forge, No. 41 Champion new.
Gear cutters, No. 13 B. & S.
Gear hobber, 169"x33", for high speed gears; will cut spur, worm and spiral gears; m. d.
Grinder, Ott 6"x6" internal.
Grinder, Ott 5"x18" plain.
Grinder, Landis No. 3 universal.
Grinders, Plymouth Nos. 17, 20.
Hammers: 1500 lb. Bement st. dr.; 800, 2000 & 2500 lb. B-M st. forg.
Hammers, 25, 60 & 80 lb. Bradley.
Hammer, W. & W. 55 lb. upright.
Millers: Milwaukee 2-B universal, Cincinnati No. 2 high duty universal; Cincinnati No. 3-S univ.; Hendey-Norton No. 3 universal; B. & S. No. 2-B, Cincinnati No. 3, and Garvin No. 12 plain; Briggs high duty production; Cincinnati No. 2 vertical.
Motor, Fairbanks-Morse, 20 h. p., 3 phase, 60 cycle.
Pipe machines, Merrill 4".
Pipe machines, Eaton-Cole-Burnham 4" & 8".
Saw, Economy No. 7, hack.
Slotter, Niles 18".
Upsetters, Acme, ⅝" steel bed.

SECOND-HAND MACHINERY

FOR SALE BY

The Patterson Tool & Supply Co., - - - Dayton, Ohio

Drill, new Demco 2-spdl.	$ 250.	Lathe, new 12"x5' Monarch	$ 350.
Drill, new 3½' Canedy-O. radial	400	Mill, new No. 1 Fox plain	400.
Grinder, new No. 2 Ohio t. & c.	500.	Mill, new No 25 Bilton plain	400.
Grinder, new No. 3 Ohio t. & c.	700.	Shaper, new 16" Whipp	300.
Grinder, new No. 1 Grand R. cut.	275.	Shaper, new 28" Columbia	1250.

FOR SALE BY

A. F. Strafer, - - - 30 Church St., New York City

September Specials at Bargain Prices.

Drill, 310 Baker, h. d., single pulley drive	$ 400.
Drills, 24" Cincinnati Bickford upright, like new	275.
Flat turret lathe, 2½x26 Acme, bar equipment, like new	650.
Flat turret lathe, 2½x26 J. & L., bar equipment, high serial number	400.
Radial drill, 4½' Dreses, tap. attach., box table, motor drive	450.

BORING MILLS, VERTICAL AND HORIZONTAL.

80" Pond vert., heavy, belt drive.	60" Niles-B.-P., grd. feed, s. p. d.
52" Niles-B.-B. latest type, like new.	42" Bullard, 2 heads, gear feed.
60" Bullard, gear fd., 2 hds, belt dr.	No. 2 Rochester horiz., s.p.d., 3" bar.
No. 3 Universal horizontal, s. p. d.	No. 2 Barrett horizontal cylinder.

DRILLS, UPRIGHT AND RADIAL.

6' Reed Prentice, tap. attach., s.p.d.	5' Western, tap. attach., s. p. d.
4½' Dreses, d. c. motor drive.	3½' Morris, s. p. d., like new.
310 Baker, heavy duty, 2½" cap.	26" Sibley, s. h., b. g., p. f.
25" Barnes, stationary head, b. g.	24" Cincinnati Bickford, latest type.

LATHES.

44"x24' N.-B.-P., belt drive.	36"x24' Pond, belt drive.
25x20 Reed, c. r., belt drive.	25"x24' Reed, motor drive.
24" raised 32"x16' Lodge & S., belt.	28"x21' Flather, q c., t.a., belt.
16"x8' Flather, quick change	14"x8' Lodge & Shipley, belt.

MILLING MACHINES.

No. 4 Cincinnati h. p., s. p. d., plain	No. 3B Brown & Sharpe plain.
No. 3 LeBlond universal.	No. 2B Brown & Sharpe universal.
No. 3 Ohio universal, like new.	No. 3 Cincinnati vertical, h. p.
No. 5C Becker vertical, like new.	No. 7H Becker, mfg. type.

PUNCHES AND SHEARS.

Gate shear, Hillis Jones, 1" cap., 9' blade, 28" gap, with a. c. motor.	No. 4 H. & J. dbl, 48" t., a. c. mtr.
Double angle shear, Hillis-J. No. 3, cap. 6x6x1", complete, a. c. motor.	No. 7 Ryerson, 72" t., 1½" cap., new.
	No. 5 H. & J. 48" t., a. c. motor.
	No. 6 H. & J. 32" t., belt drive.

PLANERS.

60"x60"x12' Niles-B.-P., heavy box table, elec. rev. drive 4 h., latest.	36"x36"x 8' Powell, 2 heads, cheap.
48"x48"x14' Patch, 4 h. motor drive.	36"x36"x10' Cincinnati, 2 hds., b. dr.
	28"x28"x10' American, 1 head.

PIPE MACHINES AND BOLT CUTTERS.

No. 8 Stover, s. p. d., set of dies.	4" Stover, s. p. d., set of dies.
No. 732 Little Giant, 1" cap. bolt.	1½" Acme 2 head bolt cutter.

SHAPERS.

24" American, s. p. d.	25" Smith & Mills, b. g., belt.
16" Smith & Mills, belt drive.	16" Gould & Eberhardt, belt.

SCREW MACHINES AND TURRET LATHES.

3½x36 Acme, chuck equip., grd. hd.	24" Gisholt, 6¾ hole spindle.
2½x26 Acme, complete bar equip.	2½x26 J. & L., bar equipment.
19x8 LeBlond, comb. eng. & turret	2½x28 Greenlee, chuck equipment.

MISCELLANEOUS.

Air drills and grinders, $25 each.	Hoists, 3-ton Shepard, with trolley.
Air hammers, riveting, 6" Boyer, new, guaranteed, $15 each.	Knife grinder, 30" Springfield auto.
Chipping and caulking hammers, $12 each.	Rolls, Niles-Bement-Pond 20", capacity 1", 50 h. p., a. c. motor, mod. ern drop end.
Cranes, 5-ton, 67', 55', 45', 37' span, motor and hand operated (4).	Upsetting machine, Ajax, with dies for rivets, cap. 1½".

I can sell your surplus equipment, if it is modern, at a fair price.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., 1738 St. Clair Ave., N. E., Cleveland, O.

BOLT CUTTERS AND PIPE MACHINES.

1" Acme, style B, 75$.
4" Acme, single head, complete with equip. of dies and lead screws, 75$.
6" Jarecki pipe machine.
8" Jarecki pipe machine.

HEADERS AND FORGING MACHINERY.

1" Ajax cast-iron body forging machines, (3), 75$.
3½" Ajax standard forging machine, 85$.

BORING MILLS.

Bullard 24" rapid prod. type, 70$.
60" Bullard 2-head standard.
60" Colburn 2 head vertical 70$.

BULLDOZERS.

Nos. 2, 3 & 4 Williams & White bulldozers.

CRANES.

50-ton Cleveland, 10-ton auxiliary, 220 d. c., 80' span, 90$.

DRILLS—UPRIGHT.

24" Foote-Burt No. 25 hi-speed, 95$.
24" Superior, high-speed, sliding head, (2), 85$.
32" Cincinnati-Bickford, with tapper, 75$.

DRILLS—RADIAL.

4' Cincinnati-Bickford, 80$.
Wall radials, Cleveland P. & S., 8' & 12'.

DRILLS—MULTI-SPINDLE.

4-spindle 20" Barnes, cone drive, 85$.
Baush 16x20", layout for 16 spindles, 11 spindles in place.

GRINDERS.

No. 3 Brown & Sharpe univ., 70$.
Diamond surface grinder.

HAMMERS.

250 lb. Beaudry, belt power, 85$.
600 lb. Merrill board drop, 95$.
850 lb. Bell steam forging, 85$.

LATHES.

12"x 6' South Bend, chucks, 90$.
12"x 6' Monarch, chucks, 90$.
16"x 9' Chard taper att. chucks, 90$.
16"x 6' Hendey, 85$ (2).
16"x 8' Lodge & Shipley.
16'/x9' Lehmann.
18"x10' American, cone, 75$.
24"x12' Reed, c. r., chuck fitted, 75$.
30"x15' Prentice geared head motor driven lathe, c. r., 80$.

MILLERS.

No. 0 Rockford, 100$.
No. 0 Steptoe plain b. gd., hds., 95$.
20"x2½"x18" Oesterlein plain, 50$.
No. 2 Brown & Sharpe vertical, 60$.
No. 2-A Brown & Sharpe univ., 75$.
No. 3 Brown & Sharpe plain, cone drive, geared feeds, 65$.
No. 3-B hvy. Brown & S. plain, 75$.
24x10 Ingersoll, 4-heads, 80$.

PLANERS.

22"x24"x57" Fitchburg, 70$.
30"x30"x8' Gray, single head, 80$.
24"x24"x6' Liberty, new, 1 hd., 100$.
48"x48"x16' Gray, 4 hds., mtr. dr., 95$.

PUNCHES.

No. 2 Hilles & Jones horiz., 70$.
42" gap, American, 70$.
54" gap, American, 70$.

SLOTTERS.

12" Sellers, crank, geared.
Niles, 4-step cone pulley for c. s. drive, has bracket on, can be used to motor drive electric equipment, 75$.
10" Newton, crank, good.
15" Niles, arranged motor drive, gear feed, electrical equipment, 75$.

TURRET LATHES.

2x24 Warner & Swasey, hollow hexagon, geared feed, pump, tools, etc., 60$.
21" Gisholt standard turret lathe, 70$.
3"x36" Jones & Lamson turret lathe.
24" Gisholt turret lathe.
Nos. 4 and 6 Warner & Swasey standard screw machines

MISCELLANEOUS.

Chain draw benches, 10,000 to 20,000 lbs. Waterbury Farrel and United Engineering, 20', 80$.
Hack saws, 6" Racine, (2).
Riveters, 24" gap, Hanna, (2).
Shaper, 24" Walcott back geared.

FOR SALE BY

E. L. Essley Machinery Co., 551 557 Washington Blvd., Chicago, Ill.
Branch Store, 78-80 W. Water St., Milwaukee, Wis.

Boring mill, 24" Bullard vert.
Boring mche., No. 1 Cleveland.
Drill, 24" No. 310 Baker hvy. duty.
Drill, No. 25 Foote-Burt.
Drill, mult., D-12 Fox, rect. ang. hd.
Gear cutter, 30"x10'x4p Flather aut.
Hammer, 1200 lb. Bliss board drop.
Keyseat miller, No. 3 J. T. Burr.
Lathe, 20"x12' Hendey, q. c. g.
Lathe, 30"x12' LeBlond.
Lathe, 30"x28½' Pond.
Lathe, 38"x18' New Haven.
Lathe, pulley, 40" Streit.
Miller, plain, 28" type "A" Briggs.
Miller, pl., No. 2 Clev., sgl. pulley dr.
Miller, univ., No. 2 Clev. sgl. pul. dr.
Miller, thread, No. 8 Lees-Bradner, single pulley drive.
Planers, 36"x36"x12' Rockford, 2 hds.
Planer, plate, 16' No. 3 Niles.
Planer, 72"x62"x45' Hamilton, 4 hds.
Press, No. 512 Niagara, s. a.
Punch, No. 8 Whiting, s. e., 48" thrt.
Shear, 8' Stoll, power sq., gd.
Sh., splitting, No. 134 Lennox rotary.
Shear, No. 696 Niagara gap.
Shear, gate, No. 6½ Hilles & J. crk.
Slotter, 26" Niles, gd.
Turret lathe, No. 2-A W. & S. univ.
Turret lathe, 2" Wood tilted.

FOR SALE BY

Brownell Machery Co., - 11-13 Eddy St., Providence, R. I.

BORING MILLS.

No. 1 Cleveland horizontal, 2½".
No. 1 Lucas horizontal, 3".
No. 3A Universal horizontal, 3½".
48" Colburn vertical.

DRILLING MACHINES.

Demco No. 34A bench, 3-spindle.
Demco No. 34A bench, 4 spindle.
Langelier No. 2 bench, h. s., b. b., 11/32".
Reed-Prentice upright, 3 spindle.
Cincinnati (Avey) upright, 3-spindle.
Henry & Wright upright, 5-spindle.
Snyder 23", stationary head.
Henry & W. sens. ball bear'g radial.
Mueller plain radial, 4' s.p.d.

GEAR CUTTERS AND GRINDERS.

No. 3 Brown & S. gear cutter, 26".
Whiton hand feed gear cutter.
No. 612 Fellows gear shaper.
Cleveland profile grinder.
No. 3 Wilmarth & Morman surface grinder.
LeBlond universal tool and cutter grinder.

MILLING MACHINES.

Ingersoll, fixed rail type, 24x8, 3 hds.
No. 1-M Potter & Johnston.
No. 1½ Brown & Sharpe universal.
No. 28 Oesterlein plain.
No. 25 Bilton plain, b. g.
Briggs type A plain manufacturing.
No. 3 Brown & Sharpe vertical.
No. 3 Becker vertical.
No. 6 Whitney hand miller.
Thurston die miller.

LATHES.

Bosworth milling lathes.
12"x5' Vernon, q. c. g.
14"x8' Prentice, geared head.
16"x6' Cisco, q. c. g.
14"x19' Hendey, q. c. g.
20"x8' Roulsted.
26"x16' Reed, taper.
26"x21' Reed, taper.

PLANERS AND SHAPERS.

17"x17"x 4' Whitcomb.
22"x22"x 5' Whitcomb.
24"x24"x 6' Powell.
28"x30"x14' Whitcomb-Blaisdell.
36"x36"x22' Pond, 2 heads.
42"x54"x14' Gray, 3 heads.
16" Sellew tool room shaper.
20" Kelly back geared shaper.
28" Hendey friction shaper.

PRESSES.

50 lb. Standard automatic drop.
200 lb. Standard automatic drop.
300 lb. Standard automatic drop.
No. 4 Greenerd arbor press.
No. 3-B Standard s. a. inclinable power press.
No. 1 Standard broach. & drawing 7".
No. 54 Niagara geared.

WOODWORKING MACHINES.

Band saw, 42" Clement.
Jig saw, No. 1 Beach.
Jointer, 18" Crescent.
Jointer, 24" Witherby, Rugg & R.
Universal woodworker, No. 31 Sidney.

MISCELLANEOUS.

Chucking mchs., No. 6A Potter & J.
Flat turret lathes, 2x24 Jones & Lamson.
Screw mchs., 1½x18" Pratt & W.
Screw machines, No. 2 Southworth.
Slotter, 12" Bement Miles.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

12"x60" Fitchburg Lo-Swing.
14"x 6' Hamilton.
14"x 6' Prentice Bros., s. b. g., l. c. g., with t. a., with 8" 4-jaw ind. ck.
15"x 6' South Bend, c. r. complete.
16"x 6' South Bend, c. r. complete.
18"x 8' Prentice c. r., l. c. g., chuck.
14"x 6' Reed, r. & f. rest.
18"x10' Star, 4-s. c., s. g., with 16" 4-jaw ind. chuck.
14" Reed production lathes, with dbl. cut-off slide and carriage, (7).
14"x6' Hendey q. c. g., c.r. and t.a., with draw-in attach. and collets.
14"x6' Monarch, c. r., standard.
14"x6' Monarch, c.r., stand. pattern.

TURRET LATHES AND SCREW MACHINES.

24" Davis turret boring and chucking lathe, with forming rest.
No. 1 Warner & S., p.h., a. c. and b.f.
No. 2-A W. & S. g. h. tur. lathes, (3).
No. 3-A W. & S. g. h. turret lathe.
No. 3, 1½" Wood tilted turret.
1½" Acme screw mche., p. f. to tur.
26" Gisholt heavy duty turret lathe.
2"x24' Jones & L. g. h. flat turret.
No. 00 Brown & Sharpe auto.
No. 0 Brown & Sharpe auto. (3).
No. 2 Brown & Sharpe auto. (2).
No. 2 Warner & S. p.h. screw mchs., a. c. & b. f., p. f to turret. (3).
1" Biggs, p. h., a. c. & b. f.
No. 4 W. & S., p. h., a. c. & b. f.

DRILLING MACHINES.

20" W. F. & John Barnes, stationary head, b.g. and p. f. (2).
Henry & W. sgl. sp., h. s., b. b., ck.
No. 1 Minster high speed heavy duty, with pump.
25" Superior, sliding hd., b. g., p. f., with tapping attachment.
21" Superior, sliding hd., b. g., p. f., with tapping attachment.
4-spindle Leland-Gifford. h. s., b. b., with p. f. to each spindle.
24" Baker heavy duty.
6' arm Western radial, with tap. att., arranged for motor drive.
20" W. F. & John Barnes, stationary head, p. l. f., (2).
21" Superior, stationary hd., p. l. f.
20" Superior, stationary hd., p. l. f.
5' arm American triple geared radial with speed box, s. p. d., with t. a. and box table.
4' arm Hammond h. s. radial.

MILLING MACHINES.

No. 7 Becker plain.
No. 26 Becker pl., without bk. grs., with power fd., pump and tank.
No. 1½ Rockford plain, with div. hd.
No. 24 Ohio plain b. g. complete.
No. 1-Y Brown & Sharpe plain.
No. 22 Garvin, vertical spindle.
Potter & Johnston dbl. table automatic production miller.

GRINDERS.

No. 10 Cochrane-Bly auto. bench saw filing machine.
No. 1 Brown & Sharpe, univ.
Type "DE" Hisey-Wolf internal.
No. 14-16 Besly, wet ring wheel.
No. 11 B. & S. plain grinders, (2).
American drill grinder.
Type WTA Cincinnati.
Plain emery wh'l stand with column.
No. 1 W. & M. univ. cutter & reamer.

SHAPERS AND PLANERS.

22"x22"x 5' Putnam planers (2).
42"x48"x10' Sellers planer.
20" Steptoe, b. g.
36"x36"x12' W. & P., two rail heads.

METAL CUTTING TOOLS & SQUARING SHEARS.

Higley cold saw.
3" new Davis cutting-off machine.
36" Niagara foot power squ. shear.
30" Niagara foot power squar. shear.
No. 152, 52" Robinson power squaring shear, 16 gauge capacity.

GEAR CUTTERS AND HOBBERS

26" & 36" No. 3 Brown & S. auto.
No. 13 Brown & Sharpe auto.
No. 12 Barber-Colman hobbers.

HAMMERS.

Coffman post pwr. dr. hammer, 25 lbs.
Cady belt drop hammer, 100 lbs.
Quickwork body hammer.

MISCELLANEOUS.

Bench tapper, Montgomery, ½" cap.
Bench tapper, Hubbell, ½" cap.
Bolt cutter, 2" Morgan.
Broach, No. 2 J. N. Lapointe, with set broaches and guides, ½" to ¾" keyway.
Broaching machine, Lapointe No. 1½.
Pipe mche., No. 1, ½" to 2" Williams.
Pipe mche., No. 3, 1" to 6" Williams.
Pipe machine, Oster, cap. 1" to 4", with full set r. & l. chasers.
Polishing lathes, City Machine Co.
Polishing lathe, Hammond, h.s., b.b.
Pulley lathe, Streit.

FOR SALE BY

A. M. Stoehr Machinery Co., 560 W. Adams St., Chicago, Ill.

Blue printing and drying machine.
Boring mills, 42" Baush, 54 & 60" Niles, all have 2 heads.
Drill presses, 1 spindle Sigourney; 24" Barnes, with tap. attachment; 3 spindle Barnes all geared.
Gear hobbers, cutters: 12" Barber-C.; 12" Cin.; 48" & 60" Gould & E.
Grinders, Heald piston ring (4); Nos. 1 and 3 LaSalle plain and surface; 3"x18" Norton.
Hammer, 500 lb. Beaudry, & others.
Lathes, 22" to 44" McCabe; 9x42 Barnes; 14x8 Rockford, q.c.g., late type; 14x8 American, q. c. g.; 18x8 Barnes heavy duty; 15 & 24 spinning, and others to 60".
Milling mchs., No. 25 Becker plain; No. 1½ Valley City plain; No. 0 Rockford plain; No. 2 Van Norman Duplex, and others.
Oil extractors, centrifugal, (8).

Pipe machines, 2" & 6" Jarecki.
Punch and shears, No. 5 Long & A. double end, ½" thru 6"; No. 14 W., double end, 15" thrt.
Punch presses, No. 16 Bliss horning; No. 3 Bliss Stiles; No. 4 Robinson, o. b. i.; No. 4 Long & A. multiple punch; and others.
Rolls, 10' Bertsch, pipe forming.
Saws, 6x6 Peerless high speed; 9x9 Sterling high speed; 12x12 Racine high speed.
Screw machines, Nos. 2 & 3 Foster (12); Nos. 52 & 53 Acme; No. 0 B. & S.; others plain & universal.
Screw threader, No. 10 Waterbury.
Shears, No. 3 N. D. splitting, ½" cap.; Pittsburgh alligator, 1".
Shapers, 7" Rhodes, bench; 14" Steptoe; 18" Flather, crank.
Welders, both spot and butt.
Wire strai't'g mche., 3/16" Shuster.

FOR SALE BY

Norton-Broadway Machinery Co., 236-38 Broadway, Cincinnati, O.

LATHES.

13"x21"x8' Willard, removable gap, quick change ..... $ 525.
14"x6' LeBlond, q. c. ..... 300.
16"x6' Columbus, prac. new ..... 295.
16"x6' Cincinnati, q.c. ..... 275.
16"x8' Lathe & Morse l c. ..... 100.
18"x8' Lodge & D., old style ..... 100.
25"x10' Hamilton, q. c., compound rest and turret ..... 725.
20"x6' Fay & Scott, l. c. ..... $ 195.
24" x 48" x 11' Rahn-Larmon, sliding bed, geared head ..... 825.
26"x14' Putnam, ex. hvy. duty ..... 1250.
24"x12' Monarch, q. c., heavy duty, modern, Al shape ..... 1250.
24"x42"x12' Schumacher & B. double spindle ..... 675.

MILLING MACHINES.

2-B Brown & S., sgl. pulley ..... $ 775.
No. 3 Brown & Sharpe plain ..... 525.
No. 5 Brown & Sharpe plain ..... 625.
No. 4 Cin'ti plain, incomplete ..... $ 300.
No. 20 Oesterlein universal.
No. 2 Cincinnati, old st. univ. 425.

SHAPERS.

16" Queen City, b. g. crk., belt shifter ..... $ 375.
14" Rockford, crank ..... 275.
26" Hendey, geared friction type ..... $ 300.
24" Queen City, b. g. crank ..... 725.

DRILLS.

24" Hoefer, 2-spindle ..... $ 375.
32" Aurora, sliding head ..... 250.
28" Bickford, sliding head ..... 295.
24" Cincinnati, tapping att. ..... $ 310.
30" Prentice radial ..... 425.
24" Aurora, sliding head, (8).

PLANERS.

16"x18"x48" Hendey ..... $ 250.
36"x36"x12' Gray, 2 heads ..... 750.
32"x32"x20' American ..... 950.
36"x36"x12' Gray, one head ..... $ 900.
42"x42"x26' Cincinnati, 2 hds ..... 2500.

BORING MILLS.

84" Niles, vertical, 2 heads ..... $1750.
42" Bullard, 2 heads ..... 1250.
42" Colburn, 2 heads ..... $1200.
36" Niles, 2 heads ..... 750.

MISCELLANEOUS.

Punch presses, Bliss, Willard, Sidney, Niagara, Ferracute and East Iron.
Punches, Nos. 4, 5 and 7 Long & Allstatter.
Punch, style A Long & Allsttatter, 2" thru 1½", 14" throat ..... $ 850.
Turret, No. 6 Warner & Swasey ..... 525.
Compressors, Pumps, Engines, Boilers, Threading Machine, Grinders, Swaging Machines, etc., etc.

SECOND-HAND MACHINERY

FOR SALE BY

L. V. Nash, - - - Oregon, Illinois

Drill press, 20".
Shear and punching machine, heavy, and dies.
Patent and machine for making nut locks.

FOR SALE BY

Brown Machinery Co., - - 2323 N. 9th St., St. Louis, Mo.

Boring mill, No. 10 Beaman-S., hor.
Boring mill, 60" Sellers, 2 heads.
Boring mill, 42" Bullard.
Die sinker, No. 3 Jackson.
Drill, 24" Aurora, sl. hd., b. g., p. f.
Drill, 24"Cincinnati, sl.hd., b.g., p.f.
Drill, 26-spindle Baush, No. 3.
Drill, 6 spindle Allen, b. b.
Drill, No. 1 Barnes hor. radial.
Drills, rad., 3' American & Mueller.
Gear cutter, 30" Whiton.
Gear hobber, No. 1 Farwell.
Gear shaper, Fellows 36".
Grinders, No. 6 & No. 14 Besly.
Grinders, 5x18 Ott; Norton.
Grinder, No. 12 Brown & Sharpe.
Hammer, Dupont, size D.
Lathes, 14", 16", 20", 26" Walcott, d. b. g., q. c. g.
Lathe, 18"x10' LeBlond.
Lathe, 17"x 6' Cincinnati, semi q. c.
Lathe, 20"x8' Reed.
Lathe, 26"x14' Hamilton.
Miller, 1-B Fox horizontal.
Miller, No. 4 Hendey, b. g.
Miller, No. 2 Becker.
Miller, No. 5B Becker-B.
Miller, 8", 12" P. & W., auto.
Planer, 30"x30"x8' Pease.
Planer, 54"x54"x12' Pond.
Presses, L. & J. Nos. 1, 2, 3.
Press, arch, No. 42 Swaine.
Press, toggle, Robinson 10".
Profilers, two-spindle, Pratt & Whitney, Putnam, Reed-Prentice.
Punch, No. 39 Beloit, cap. ¾" in ⅞".
Punch, Ryerson-Kling rapid action, 18" throat, ½ in ⅞.
Punch & shears, single end, No. 4 Bremer, ¾" in ⅞", 12" throat.
Punch & shear, No. 5 Long & Allstatter, ⅝" in ⅞", 4" thrt., dbl. end.
Roll, plate straightening, No. 0 Hilles & Jones.
Shears, 134 Marshalltown rotary, ¾".
Shears, No. 260 Peerless 60", 14 ga.
Shear, No. 13 Pettin. rotary, 14 ga.
Stake riveter & punch, No. 3 Hilles & Jones, 5' throat.

Many other bargains. Write for Stock List No. 120.

FOR SALE BY

W. P. Little Co., - West 9th & Front Sts., Cleveland, Ohio

BOLT CUTTERS.

2" Foote-Burt.
2½" National.

BORING MACHINES.

30" Colburn vertical.
No. 3 Marvel cylinder.

MILLING MACHINES.

No. 0 Kempsmith universal.
18" Cincinnati b. g.
No. 15 Brainard.
No. 1 Kempsmith pl., with div. hd.
No. 2 Cincinnati pl., with div. hd.
No. 6 Whitney hand.

PUNCH PRESSES.

No. 2 Bliss Stiles pattern.
No. 21 Bliss.
No. 14½ Williams & White.
S. G. 55 Ferracute double crank.
No. 24 Cleveland horning.
No. 87 Zeh & Hahnemann.
No. 4 Niagara gang punch.
Z. & H. double acting cam drawing.
30" geared, arch.

GRINDERS.

No. 6 Bryant internal.
No. 75 Heald internal.
No. 3 Modern universal.
No. 6 Rivett internal.

RADIAL TAPPING MACHINE.

½" Rickert & Shafer radial tapping machine, motor driven.

SPINNING LATHES.

22" Pryibil.
28" Pryibil.

MISCELLANEOUS.

Hammer, 50 lb. Bradley upright.
Hammer, 250 lb. Morgan steam.
Keyseater, No. 0 Mitts & Merrill.
Riveter, ½" Shuster.
Slotter, 8", rotary table.
Spline miller, ½" Pratt & Whitney.
Turret, No. 2 Bardons & Oliver.

FOR SALE BY

Fred C. Dickow Machinery Co., 2105 W. Lake St., Chicago, Ill.

Arbor press, Greenerd No. 15..$ 90.
Grinder, Norton cr. shaft; cost $4200; like new; no counter... 385.
Grinder, Bath compl. univ..... 190.
Lathe, 21"x9' L. & Davis A-L. 225.
Lathe, 13" Gisholt, like new.. 485.
Lathe, 3x26 J. & L. turret, A-1 285.
Lathe, 2x26 P. & W.tur., 1 new 375.
Miller, No. 3 Kempsmith..... 650.
Miller, Hendey slab, tbl. 3.6x54 225.
Miller, No. 0 Steptoe, i. centers 435.
Planer, 22"x24"x5' Putnam..... 385.
Motors, speed and engine lathes, drills, grinders, hack saws, oil burners, etc.

FOR SALE BY

Clark Machinery Co., 1235-45 St. Clair Ave., Cleveland, O.

Box nailer, Morgan No. 7.
Drill press, 4-spindle gang.
Planer, 28"x26"x6' Flather.
Punch press, No. 3 Niagara, o.b.i.
Punch press, No. 2 Bliss cons. o.b.i.
Punch press, No. 4 Bliss cons. o.b.i.
Punch press, No. 16 Stoll, b.g., o.b.i.
Screw machine, No. 2 W. & S.
Screw machine, No. 5 Foster.
Screw machine, No. 6 Foster.
Screw mch., No. 515 National Acme.
Shaper, 20" G. & E., b. g.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,
1001-3-5 N. Sixth St., St. Louis, Mo.

LATHES.

9"x12" Sundstrand.
14"x 6' American, q. c.
15"x 8' Sidney, q. c.
18"x 6' American, q. c.
19"x 8' Sidney, q. c.
24"x12' Lodge & Shipley, q. c.
26"x16' Niles, plain change.
26"x13' Putnam, q. c., ar. for motor.
30"x15' American, q. c.
32"x16' LeBlond, q c.
33"x20' Draper, triple geared.
36"x18' Prentice Bros., t. a.
20" Pit lathe.

SHAPERS.

Smith & Mills, all sizes.
16" Flather, 4 speeds.

PLANERS.

24"x24"x 6' Lodge & Davis.
32"x32"x 8' Whitcomb.
36"x36"x10' Flather.
60" open side Detrick & H., 3 heads.

GRINDERS.

19"x36" Thompson universal.
8" Heald rotary, with magnetic ck.
Wilmarth & Morman drill grinder.
12"x42" Landis universal.
30" Diamond face grinder.
5"x18" Ott plain grinder.

DRILLING MACHINES.

20" Barnes.
24" Aurora, sliding head.
26" Barnes, stationary head.
34" sliding head.
3' arm Mueller spd. box drive radial.
5' arm Prentice radial.
4 spindle Avey, power feed.

MILLERS.

No. 2 Kempsmith plain.
No. 4 Becker-Brainerd universal.
No. 33 Kempsmith manufacturing.
No. 2 Knight vertical.
Nos. 0 and 3 Burke bench millers.

MISCELLANEOUS.

Bolt cutter, double, Landis, 1½".
Boring mill, No. 1 Bisse horiz.
Boring mill, 60" Bullard.
Bulldozer, 75-ton Lourie hydraulic.
Engines, Corliss, 75 to 200 h. p.
Gas furnace, Gilbert & Barker.
Hammer, 200 lb. Bradley.
Keyseater, No. 00 Baker.
Magnetic pulley, 24"x26".
Press, portable, hydraulic.
Punch, No. 14 Williams-White, dbl.
Punch, No. 5 Long & Allst., 5" thrt.
Punch, No. 7 Long & Allst., 4" thrt.
Punch, No. 3 Long & Allst., ⅜ by ⅜.
Riveters, lattice, Allen.
Riveter, 24" Shepard.
Saw, No. 12 Higley.
Saw, No. 21 Higley.
Saw, Lucas revolving, 31" blade.
Screw machine, No. 4 Woods.
Shear, squaring, 50" Excelsior.
Shear, power, circle, Niagara.
Spot welder, Toledo, 20 k. w.
Tilted turret lathes, Wood, (3).

SECOND-HAND MACHINERY

FOR SALE BY

The Reeve-Fritts Company, - 37 So. Desplaines St., Chicago, Ill.

Drill, 14" Henry & Wright, b. b.
Drill, 20" Milwaukee, b. g., p. f.
Drill, 20" Rockford, w. & l. feed.
Drill, 22" Champion, b. g., p. f.
Drill, radial, 24' Canedy-Otto.
Lathe, speed, 11"x4' Wells.
Lathe, 10"x4' Prentice.
Lathe, 12"x5' Davis, and taper.
Lathe, 13"x6' Willard.
Lathe, 14"x6' Carroll-Jamieson.
Lathe, 14"x6' Rockford.
Lathe, 14"x6' Flather.
Lathe, 15"x6' Monarch.
Lathe, 16"x8' Flather, and taper.
Lathe, 16"x8' American, q. c. g.
Lathe, 24"x10' South Bend.

FOR SALE BY

Niles-Bement-Pond Company, - 111 Broadway, New York
Located at our various factories

LATHES.

12"x 5' Reed, taper.
14"x 8' P. & W., taper.
16"x 6' L. & S., cone head.
24"x24' Niles.
26"x10' Pond, 220 volt, d. c. motor.
28"x12' Pond.
36"x12' Pond, t. g., 220 v., d. c. mtr.
36"x17' Pond, taper, 220 v., d. c. mtr.
42"x20' Niles, t. g.
48"x28' Niles, t. g.
50"x17' Miles, old style.
54"x28' American, t. g., 220 volt, d. c. motor.

TURRET LATHES.

1", 2", 2½" and 3" P. & W.
2"x24" W. & S. hollow hex.
21" and 28" Pond rigid turrets.
28" & 34" Gisholts.
32" Conradson-American turret.

PLANERS.

20"x20"x 6' Bement.
24"x24"x 6' Powell.
24"x24"x 6', 8' and 10' Whitcomb-B.
26"x26"x 6' Gray.
30"x30"x 6' & 10' Pond, 2 heads.
30"x30"x 6' to 12' Pond, reversing motors.
36"x36"x10' to 16' Niles.
36"x36"x12' to 16' Pond, reversing motors.
42"x42"x14' Bement.
42"x42"x26' Pond, reversing motor.
48"x48"x16' Pond, reversing motor.
48"x48"x20' Bement, belt.
54"x36"x10' Bement, belt.
50"x36"x22' Pond, reversing motor.
54"x54"x22' Pond, rev motor.
60"x60"x20' & 24' Niles, belt.
72"x72"x12' Bement, belt.
72"x60"x14' Bement, reversing mtr.
10'x10'x36' Betts, 220 volt, d. c. motor through belts.

MILLERS AND GEAR CUTTERS.

No. 3-B plain, 220 v., d. c. motor, Brown & Sharpe.
No. 4 plain, cone pulley, B. & S.
No. 5 plain, cone pulley, B. & S.
No. 4-48" Newark, 220 v., d. c. mtr.
6x48 to 132" P. & W. old style thread millers.
15" Gleason bevel gear generator.
No. 5 vertical, cone pulley, B. & S.
36" to 60" B. & S. spur gear cutters.

DRILLING MACHINES.

32" Aurora, tapping attachment.
40" Aurora, tapping attachment.
34' Morris speed box radial.
5' Niles full universal, speed box.
6' Pond, 220 volt, d. c. motor.
6' Niles full universal, speed box.
12-spindle No. 13 P. & W. multiple.
3 spindle 23" Barnes gang.

BORING MACHINES.

36-44" Niles side hd. mill, 220 v., d. c.
51" Niles mill, with turret head.
60" Bement b. & t. mill.
42, 54 and 64" Niles floor borers.
28 to 48" horizontal boring and drilling machines.

MISCELLANEOUS.

Air compressors, 324' and 835', steam drive.
Crane, 3-ton, 19' span, Niles 3-motor, 220 volt, d. c.
Engines, 125, 150 and 200 h. p. Philadelphia Corliss.
Generator set, 100 k. w., 22 volt, d. c., direct connected to engine.
Heater, 600 h.p Cochrane, fd. water.
Grinder, Mummert-Dixon portable radial, 220 volt d. c. motor.
Grinder, No. 6 Bryant hole gr.
Grinder, P. & W. thread miller cutter.
Pumps, 200 to 1000 gal., steam drive.
Slotter, 18" Putnam, 220 volt, d. c. motor.

FOR SALE BY

Chas. Molitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

Bolt cutters: Landis, Geometric.
Boring mills: Bullard.
Drill presses: Allen, Avey.
Gear cutters: Brown & S., Gould & Eberhardt.
Grinders, disc: Besly, Gardner.
Grinders, univ.: Brown & Sharpe, Wilmarth & Morman.
Hack saws: Peerless.
Lathes: Hendey, Vernon, Niles.
Millers: Brown & Sharpe, LeBlond, Kempsmith.
Punch presses: Nos. 1 and 7.
Radial drills: Fosdick, Bickford.
Screw mchs., auto.: Gridley, Warner & Swasey, Brown & Sharpe.
Shapers: Gould & E., Smith & Mills.

We have a large stock of modern iron and metal working machines, also chucks, vises, etc., etc. Write us your wants, we can save you money.

FOR SALE BY

B. C. Allen Machinery Co., 510 W. Van Buren St., Chicago, Ill.

Blower, 2½" pos.....$ 40.
Boring mill, 22" Colburn..... 400.
Boring mill, 34" King..... 650.
Drill press, 15" Rockford, t. a... 50.
Drill press, 10" Barnes, friction 28.
Drill press, 20", square base..... 65.
Drill press, 20", b. g..... 80.
Drill press, 24", sliding hd., b.g. 135.
Drill press, 4-spdl. Barnes hvy. 675.
Gear cutter, B. & S. auto. No. 3 500.
Gear cutter, B. & S. auto. No. 4 575.
Lathe, 11"x 5' Rockford..... 125.
Lathe, 14"x 6' Putnam, c. r.... 125.
Lathe, 16"x 6' Peerless..... 150.
Lathe, 16"x 8' Flather, q. c. g... 275.
Lathe, 18"x 8' Flather, q. c. g... 375.
Lathe, 20"x10' Monarch, q. c. g. 3500.
Miller, Whitney hand..... 75.
Miller, No. 2 plain, heavy..... 500.
Miller, No. 4 plain, heavy..... 750.
Planer, 17"x17"x4' Whitcomb... 175.
Planer, 24"x24"x6' Hendey..... 400.
Polishing lathe, No. 1 H. & V. 35.
Punch press, No. 2, solid back. 150.
Punch pr., No. 1 Am. Can. inc... 95.
Punch pr., Nos. 2, 3 and 4 inc.
Punch & shear, ½" Badger..... 150.
Shaper, 15", crank..... 125.
Shaper, 16" Ohio, b. g..... 375.
Square shear, 36"..... 45.
Square shear, 36"..... 85.
Many other machines. Write us.

FOR SALE BY

Jones Machine Tool Co., 528-532 E. Front St., Cincinnati, O.

LATHES.

14"x 6' Bradford, quick change.
14"x 6' Monarch, qck. chg., s. p., geared head, (2).
16"x 6' Lodge & Shipley, qck. chg.
20"x12' Greaves Klusman, q. c.
24"x16' American, q. c., cone drive.
30"x12' H. S. & Gamble, q. c.
24"x42"x16' Schumacher double spindle lathe.

MILLERS.

No. 1½ B. & S. plain.
No. 2 Hendey plain.
No. 2 Kempsmith plain.
No. 2½ LeBlond universal.

PLANERS.

36"x36"x8' Flather, 2 heads.
30"x 8' Gray, 2 heads.
32"x20' American, 2 heads.
42"x36"x26' Cincinnati, 2 heads.

PRESSES.

Nos. 2 & 3 Toledo, o. b. inc.
No. 2 Robinson, o. b.
No. 3 L. & A. double end punch.
No. 18 Bliss, open back inc.
No. 20 Bliss, o. b. inc., (10).
Horning pres., No. 15 Robinson, (3).

SHAPERS.

14" Steptoe, plain crank.
18" Barker, plain crank.
20" Steptoe, back geared crank.
21" American, back geared crank.
24" Barker, back geared crank.
24" Smith & Mills, bk. grd. crank.

SQUARE SHEARS.

36" No. 236 Niagara, power.
96" P. S. & W. foot power, 20 ga.
96" Robinson, power, 14 gauge.
10'—10 gauge, worm drive.

MISCELLANEOUS.

Bolt cutters, 1½" Acme, (2).
Drill presses, 24" Sibley & Ware (4).
Grinder, No. 60 Heald, cylinder.
Grinder, Heim centerless.

FOR SALE BY

H. D. Warner, - - 26 High St., Hartford. Conn.

Automatics, Fay (3).
Chucking mche., P. & J. No. 6-A, $ 300.
Fire pumps, equal to new, (2).
Grinder, P. & W. vertical.
Grinder, LeBlond No. 1 univ.
Grinder, 10"x50" Norton cyl.
Hack saw, Atkins, power..... 65.
Miller, Becker No. 3, knee ty. pl. 250.
Millers, Lincoln, (25), all makes, $100. each upwards.
Planer, 22"x22"x6' Gray..... 350.
Press, blanking, F. F. No. 5.... 150.
Sand blast, Pangborn portable $ 300.
Screw machines, Gridley 3¼" s. s. auto, (6), each..... 350.
Screw mches., Cleveland auto., (10), sizes ⅜" to 6".
Screw mches., Hartford auto. (20), sizes ½" to 2".
Shear, alligator, to cut 1"..... 100.
Shear, circular, to cut 4" to 36" 150.
Stud turning lathe, LeBlond 21"x8'..... 250.
Welding mche., butt, ¾" Agnew 350.

1,000 Machines for sale, covering every requirement.

FOR SALE BY

Marr-Galbreath Machinery Co., 127 Water St., Pittsburgh, Pa.

Blower, No. 3 Sturtevant, pressure.
Bolt cutters, Acme, 1½", 2", 3" & 6".
Boring mill, No. 5 B. & S., post.
Boring mill, Betts horiz., 3 & 4" bars.
Boring mill, vertical, 72" Betts.
Brake, hand & foot, 50" P. S. & W.
Bulldozers, Nos. 1, 2, 3, 4, 5, 26 & 27.
Bulldozers, Nos. 6, 8 & 9 W.-W.
Compressor, 14"x10"x12", Ingersoll.
Drills, radial, 3' Bickford plain, t. a.
Drill, radial, 3' Prentice plain.
Drill, radial, 2½' Taylor-Fenn, sens.
Drills, 36" Hoefer; 20" Barnes, b. g.
Drills, No. 2 Colburn, mfg. type, (4).
Drill, Allen, 20" sensitive, 4-spdl.
Drill, heavy duty, 24" Foote-Burt.
Exhauster, No. 8 Buffalo.
Exhausters, No. 28 Sturtevant, dbl.
Forging machine, 4" Ajax, steel.
Forging mche., 1½" Acme, side shear.
Gear hobber, No. 12 Barber Colman.
Grinder, No. 3 Ohio univ. tool & c.
Grinder, No. 2 Stenotype, double end, with 2 magnetic chucks 7"x9".
Grinder, Yankee drill, "A" dbl. end.
Hammers, 80 & 100 lb. Bradley helve.
Hammers, steam drop, 1500, 3000 lb.
Hammers, st. drop, 5000, 2500 lbs.
Hot saw & burring machine, Acme.
Keyseater, No. 1 Baker, for motor.
Lathe, gap, 36/60"x12/30' Harringt'n.
Lathe, 36"x16' American, g. h., t. a., a. c. motor, (98$)
Lathe, 30"x12' LeBlond, q. c. g., t. a.
Lathe, 24"x8' Porter, 2½" h. s., c. r.
Lathes, 20"x10 Schellenbach, gd. hd.
Lathe, 18"x10' Porter, s. b. g., c. r.
Lathe, 18"x8' Hollingworth, q. c g.
Lathe, 18"x8' Hendey, pl. change.
Lathes, 18"x10' L. & S., & LeBlond.
Lathe, 16"x8' Bradford, pl. change.
Lathe, 14"x6' Monarch, q. c. g., t. a.
Lathe, 13"x6' South Bend, comp. rest.
Lathe, speed, 11"x4' Prentiss, t-rest.
Miller, vertical, No. 2 Brown & Sharpe, gear box.
Miller, No. 6 Whitney, hand.
Miller, bench, No. 1 Burke, hd.
Miller, No. 3 Cincinnati, plain.
Miller, No. 3H LeBlond, pl. ind. hd.
Miller, No. 35 Oesterlein, universal.
Miller, No. 2 Kempsmith universal.
Motor, 10 h. p., 110 v., d. c., 1080 rev.
Nut tapper, ¾" Acme 6-sp. semi-auto.
Planer, 42"x42"x12' Betts, 1 head.
Planer, 42"x36"x20' Cin'ti, 4 heads.
Planer, 36"x36"x10' Pond, 3 heads.
Planer, 30"x30"x 8' Niles, by., 2 hds.
Planer, 28"x28"x 6' Gale, 1 head.
Planer, 16"x16"x12', crank drive.
Press or brake, 10' Robinson, toggle,
Press, No. 27 Bliss, horning, b. g.
Presses, No. 56 Toledo, b. g., 4" str.
Press, No. 15 Toledo, grd., 1800 lb.
Press, No. 56 Toledo, pl. trim., 3" str.
Press, No. 11 Perkins, pl. trim., 2½" str.
Press, Chambersburg, trim., pl., 3" st.
Riveting hammer, 3A High Speed.
Riveter, ¾" Shuster, style A.
Seamer, No. 305 Toledo, double.
Shaper, 7" Rhodes, crank, horiz.
Shaper, 21" American, b. g., crank.
Shapers, 20 & 24" Cin'ti, b. g., crank.
Shaper, crank, 17" Smith & M., s. g.
Shear, 36"x16 ga., 15" gap, foot.
Shear, 60"x16 ga. 18" gap, power.
Shear, Lewis univ., splitting, cap. ¾".
Shear, rotary, ¼" Lennox, 8' gap.
Shear, alligator, No. 1 Canton, 1½" sq.
Shear, plate, 9"x¼", cap. 15", m. d.
Shear, 124"x¼", 24" gap., m. d.
Shear, plate, 156"x¼", m. d., 100$.
Slotter, 15"-18" Dill, a. c. mtr.
Slotter, 8" Betts, for motor drive.
Turret lathe, No. 1 Bardons & Oliver.
Turret lathes, Libby, 18", 22" & 26".

We Buy, Sell and Exchange.

SECOND-HAND MACHINERY

FOR SALE BY

J. Horst Manufacturing Company, - LaFayette, Ind.

Air pump, Crowell rotary, with intake and outlet for 1" pipe; good condition.
Drill press, 20" Superior, screw and lever feed; very good condition.
Drill press, sensitive, 4-speed, ½" cap; sliding head and table; swinging table; in very good condition.
Gear cutting machines, Dwight Slate small automatic; in good condition except a few parts missing. (2).
Grinder, Olsen cylinder, with 2 h. p., a. c., 3 phase motor, all in first-class condition; grinds round and straight hole.
Riveting machine, small power, bench; in fair condition.
Screw machine, automatic, 4-spindle National Acme, ½" capacity, in fair condition, with collets and feeding fingers.
Wood boring machine, vertical, with foot operated table; in good condition.

FOR SALE BY

McDonald Machinery Co., 1531-33 N. Broadway, St. Louis, Mo.

BOILER EQUIPMENT.

Long & A. No. 0 angle shear, 4x4x¼.
Felber combination punch & slitting shear, 1" in 1".
Scully hvy. punch, 1" in 1", thrt. 20".
H. & J. No. 0 punch, ¾" in ¾", 14" thrt.
Badger punch, 36" throat, ½" in ½".
Miscellaneous equipment, screw punches, taps, flues, hoists, etc.

MISCELLANEOUS.

Brakes, 6' 8', & 10' hand.
Lathes, 40—9" to 24" South Bend; 26"x14' Hamilton, q. c. g.
Milling mches., Milwaukee No. 1B, Hendey No. 2 universal, American No. 1½ univ.; Becker model SD vert., rotary table, wt. 16,000 lbs.; 20 plain millers; Cinti. No 3 univ.
Planers, 36"x36"x23' Sellers, 2 hds.; 42"x42"x16' Pond, 2 heads.
Presses, No. 2 Rockford and Consolidated, No. 19 Bliss, No. 30 Toledo
Screw mchs., B. & S. No. 00, Foster No. 3 hand, 2 Woods No. 2 tilt. tur.
Shapers, new 12", 14", 16" & 20"; 36" Fellows, gear; used 16" & 24".
Sheet metal tools, Yoder and Pexto.
Slitting shear, No. 10 Quickwork.
Tire press, 200 ton hydraulic.
Welders, butt and spot.

FOR SALE BY

The Randle Machinery Co., 1723 Powers Street, Cincinnati, Ohio

ENGINE LATHES.

14"x 6' Carroll-Jamison, q. c. g.	$ 300.
15"x 6' Flather, loose change	275.
16"x 8' Reed, loose change	300.
20"x12' Bradford, q. c.	750.
22"x18' Niles, loose change	750.
24"x12' Rahn-Larmon, quick change, taper attachment	$1,000.
26"x14 Putnam, quick change taper attachment	1,250.

PLANERS.

60"x60"x12' Pond, 2 heads	$2,000.
24"x24"x 6' Gray, 1 head	700.
28"x28"x 8' Putnam, 1 head	750.
33"x32"x12' American, 2 heads	1,250.
36"x36"x14' American, 2 heads	1,350.
Pedrick & Ayer open side, planes 30" wide, bed 11' long	1,000.

MISCELLANEOUS.

Boring mill, 60" Niles vert.	$ 750.
Drill press, 28" Cincinnati upright, b. g., single pulley, gear box drive	475.
Drill press, 45" upright, back geared, power feed	300.
Drill press 24" Aurora upright, back gear, pwr. fd.	275.
Grinder, No. 60 Heald cylinder	850.
Miller, No. 2-B heavy Brown & Sharpe, sgl. pulley drive	950.
Miller, No. 3-B heavy Brown & Sharpe, sgl. pulley drive	$1,200.
Radial drill, 6' Niles full univ., d. c. motor dr., with motor	750.
Shaper, 16" Barker, bk. grd. crank, new	550.
Shaper, 12" Pratt & Whitney crank, traveling head	300.
Shaper, 24" Barker, b. g. crank	675.
Turret lathe, 24" Gisholt, d.c. motor drive, with motor	500.

Many other bargains. Send us your requirements.

SECOND-HAND MACHINERY

FOR SALE BY

Wayne Machinery Company, - - Ft. Wayne, Indiana

DRILLING MACHINES.

32" Superior, sliding head
26" Rockford, sliding head.
26" Barnes all geared.
22" Barnes all geared.
20" Rockford, b. g., p. f.
20" Buffalo, w. & l.
No. 1 Baush 16-spindle.
No. 1 Baush 10-spindle.
Baush 24-spdl., 40" circle.
Suspension ceiling drill.
44" Stover friction drill.

LATHES.

16x8 Pratt & Whitney, q. c. g., taper attachment.
21" Gisholt turret.
3½x60 Fitchburg Lo-swing.

MILLING MACHINES.

No. 32 Kemps'th, Lincoln type, (5).
No. 3½ Fox plain.
No. 1 Newton keyseat miller.
No. 2 Newton keyseat miller.

SHEET METAL MACHINES.

61" Pexto No 181 shear.
60" Pettingell No 13 rotary shear.
30" Quickwork No. 29 rotary shear.
No. 10 Pettingell bending roll.
No. 7 Pettingell former.
No 12 Niagara punch.
No. 1 Pettingell hammer.
36" Peerless No. 2 shear.
52" Peerless No. 252 shear.

Ask for late List, now ready.

FOR SALE BY

Reliance Machinery Sales Company

Brighton Road at Pennsylvania Ave., - - Pittsburgh, Pa.

Air compressor, 321' Laidlaw, b d.
Band saws, 36" Amer. metal cutting.
Band saws, 26", 32" and 36" Silver.
Blower, No. 3-F American.
Blower, No. 10 Sturtevant, 15000 cu. ft.
Boring mills, 30" Bullard, 1 head.
Boring mill, 34" Colburn, 1 head.
Boring mill, 48" Bickford, new.
Boring mill, 72" Betts vert., 2 hds.
Boring mill, 90" Niles vert., 2 hds.
Buffer, No. 14 Builders Iron Fdry.
Bulldozers, Nos. 5, 6 & 7 W. & W.
Die sinker, No. 6 Jackson.
Drill, 21" Cincinnati, s. h., t. a.
Drill, 24" Hoefer, sliding head.
Drill, 36" Snyder, sliding head.
Drill, 2' 6" Carlton high speed radial.
Drill, 4' Bickford radial, g. b., s. p. d.
Drills, Amer. 4 & 5' radial, g. b., s. p. d.
Drills, No. 2 Colburn, mfg. type, (4).
Drill, No. 2 Colburn 4-spdl. gang.
Drillers, 5-spindle Detroit, (3).
Flanging machine, McCabe.
Gear cutters, 6" Standard, spur.
Gear cutter, 36" Whiton.
Gear cutter, 60" Gould & E.
Generator set, 250 k. w., G. E., 250 volt, d. c.
Grinder, No. 2 Detroit centerless.
Grinder, Norton 10"x24".
Hammer, 40 lb. Bradley, cush. helve.
Hammer, 50 lb. upright strap, b. d.
Hammer, 100 lb upright strap, b. d.
Hammer, 2500 lb. Morgan, st. forg.
Jointer, 12" Silver.
Lathe, 14"x8' Whitcomb-Blaisdell.
Lathe, 16"x6' Prentice, bargain.
Lathe, 24"x12' R. hn & L., q. c. g.
Lathe, 30"x12' Johnson, triple grd.
Miller, No. 2 Cincinnati, h. p., vert.
Miller, No. 3 Hendey plain.
Miller, model "B" Becker, s. p. d.
Nut tapper, ¾" Acme, 6 sp., semi-aut.
Pipe machine, No. 9 Jarecki, 1 to 4".
Pipe machine, Cox, 2½" to 8".
Pipe machine, Merri 1, 2½" to 12".
Pipe machine, Stoever, 3½" to 12".
Planer, P. & W., 16"x16'x4', 1 hd.
Planer, 30"x30"x10' Powell, 1 head.
Press, No. 73 Consolidated, o. b., 2½" st.
Press, No 74 Consolidated, o. b., 2½" st.
Press, No. 65 Consolidated, geared.
Press, Ferracute, type SA182, 500-t.
Punch, Cleve., 24" thrt, ¾"x¾", m. d.
Punch, Cleve., 15" thrt, 1½"x1", m. d.
Screw mchs., No 52 National-Acme.
Screw mchs., No 55 National-Acme.
Screw mchs., No. 73 National-Acme.
Screw mchs., No. 53 National-Acme.
Screw machine, No 2 Foster, pl. hd.
Screw machine, No. 2 W. & S., pl. hd.
Shaper, 16" Hollingworth, b. g. crank
Shaper, 20" Cincinnati, b. g. crank.
Shear, No. 38 L. & A. alligator, 1¼".
Shear, No. 54 Beloit combination.
Shear, bevel, Thompson, ½" cap.
Shear, bar, capacity 6"x1" flat.
Slotter, 16-12" Dill, belt drive.
Squaring shear, 96" Stoll, 16 ga.
Upsetter, 3" Acme.
Upsetter, 4" Ajax, steel bed, side shear.

Our warehouse is full of bargains. What have you for sale?

FOR SALE BY

Carbon Steel Company, Ft. 32nd St. & A. V. R. R., Pittsburgh, Pa.

The complete liquidation of the Carbon Steel Company makes available the following tools:

Drill, Pond Machine Co. 6' radial, belt drive		500.
Grinders, Espen Lucas 1¾x13" spindle,	each,	75.
Lathes, Israel H. Johnson 30"x18", bk. grd., 5-step cone drive, (2),	ea.,	350.
Lathe, Schumacher, Boye & Emmes 18"x8', d. b. g., 3-step cone & c. s.		250.
Lathe, 36"x27' roll lathe, 60" face plate		500.
Shears, side cutting, Lewis Foundry, s. grd., 18" blade	each,	200.
Shear, plate, R. D. Wood 2"x128" hyd., 28" capacity.		
Shears, Mackintosh steam dr., 30½" thr., 4" str., 24" shear blade, (2),	ea.,	500.
Shear, Mackintosh s. grd., 22" throat, 16" blade, 2" stroke		250.

FOR SALE BY

Fitzsimmons & Cole Machinery Company

1208 House Building, - - - Pittsburgh, Pa.

Air compressor, 6½x3 portable, m.d.
Air compressor, 10x12. 164 cu. ft.
Air compressor, 16x10x10 Blaisdell.
Angle bending rolls, 4"x4"x¾".
Bending rolls, 12'x¾" Kling, m. d.
Bolt cutters, 1½", 2" & 2½" Landis.
Borer, car wheel, 42" N. B. P.
Boring mill, 60" Betts, 2 hds., m. d.
Boring mills, 42", 52" & 62" King.
Brake, 10' Chicago, No. 12 gauge.
Cold saw, 18" Higley.
Coping machine, 24" L. & A.
Drill, radial, 4' Bickford, s.p.d., t a.
Drill, radial, 5' Prentice.
Hammers, forging, 600 to 6000 lbs.
Lathe, 16"x6' South Bend, q. c. g.
Lathe, 18"x8' L. & S., q.c.g., t.a., b.d.
Miller, univ., No. 2-B Milwaukee.
Pipe machines, 2" to 12".
Planers, 30" to 120".
Planer, rotary, 36" Cleveland, b. d.
Planer, rotary, 48" N. B. P., m. d.
Shaper, 16" Cincinnati, b. d.
Shaper, 24" G. & E., b. g.
Shear, No. 2 Lennox rotary bevel.
Shears, 10'x¼" United plate shr., m.d.
Shear, 9'x¼" Morgan plate.
Upsetter, 2½" Ajax.
Upsetter, 5" National, b. d.

FOR SALE BY

McCoy-Brandt Machinery Co., 210-14 Penn Ave., Pittsburgh, Pa.

Air compressors, belted, 242 and 442 cubic feet.
Air compressors, steam, 810, 1200, 2052 and 2200 cu. ft.
Bolt cutter, 2½" Landis, single head.
Boring mills, 42" Bullard New Era.
Bulldozers, Nos. 2, 3, 4, 6 and 12.
Bulldozers, Nos. 29 & 30 W. W.
Drill, 26" Cincinnati, sliding head.
Drill, gang, 3-spdl. Hoefer, cap. ⅝".
Drills, radial, 5' Prentice, m. d.
Flanging mch., McCabe, cap. ⅜" plate.
Forging machines, 2", 3", 4" and 5".
Gear generator, 15" Gleason, m. d.
Grinder, Gisholt universal tool.
Grinder, Diamond 36", wet tool.
Grinder, 10x32 Ott universal.
Grinder, 12x48 Cincinnati universal.
Grinder, No. 4 Gardner double disc.
Lathes, 14"x 6' Hendey, grd. hd., m.d.
Lathe, 15"x8' Putnam, cone head.
Lathe, 17"x12' LeBlond, g. h., t. a.
Lathe, 19"x14" LeBlond, g. h., turn.
Lathe, 24"x26' American, m. d.
Lathes, 26"x12' Putnam, cone.
Lathe, 26"x12' Wickes, q.c.g., new.
Lathe, 50"x25' Bement, triple grd.
Millers, horiz. Nos. 3 & 5 Cincinnati.
Miller, vert., No. 0 Bickett.
Millers, vert. No. 3 B. & S., m. d.
Millers, Nos. 2, 5C & 6 Becker vert.
Motors, 5 & 7½ h. p., a. c.
Nut tappers, 10 sp. Nat., cap. 1½".
Pipe machine, 12", 10", 8", 4" & 2".
Planer, 30"x30"x8' Flather, 1 head.
Planer, 84"x84"x17' Pond, 3 hds.
Planer, 120"x25' Sellers, 4 hds., m. d.
Press, No. 68 Bliss, double acting.
Press, No. 51 Bliss, s. s., 1½" stroke.
Punch, dbl. end, 20" throats, 1¼"x1".
Rolls, bending, 16'x¾" Wickes, m. d.
Rolls, bending, 12'x5/16" H. & J.
Rolls, bending, 10'x14 ga. Bertsch.
Rolls, bending, 10"x¼", horizontal.
Shaper, 32" Cincinnati, b.g., crank.
Shaper, 16" American, b. g., crank.
Shear, plate, 126"x¼", m. d.
Shears, alligator, cap. 3" & 4½".
Shears, guil., cap. 2½", 2" & 1".
Shear, rotary, cap. ⅜", with circ. att.
Shear, rotary bevel, cap. ⅜", m. d.
Shear, 93"x⅜" plate, H. & J.

SECOND-HAND MACHINERY

FOR SALE BY

Lynd-Farquhar Co., - 423 Atlantic Ave., Boston, Mass.

Eliminate chance.
Let our knowledge and guarantee take care of you.

LATHES, TURRET

No. 6 Warner & Swasey universal, b. g., 2½" heavy duty carriage.
No. 4 B. & O., g. f. h., 1½", sw. 18".
No. 5-A Potter & J. semi-automatic.
2½"x24" Jones & Lamson.
14"x5' Pratt & Whitney.
21" Gisholt, triple geared.
3"x36" Pratt & Whitney, bar equip.

SCREW MACHINES

No. 2 Garvin s. p. hand, 1½"x6", 9 collets, wire feed, auto. chuck.
No. 2 Foster hand, 1-1/16", wire feed, automatic chuck.
1"x15" Pratt & Whitney hand, plain head.
No. 1 Bardons & Oliver hand, ⅝", wire feed, automatic chuck.
No. 3 Foster hand, 1-5/16", plain head.
No. 515 National Acme automatic, 9/16".
No. 4 Foster, g. f. h., 1-9/16".
No. 56 Acme automatic, four spindle, 2½", equipped with threading spindle and Gridley extension head.
No. 53 National Acme four spindle, 1".

SLOTTER

6" Newton Machine Tool Works.

FOR SALE BY

Eastern Machinery Co., - 408 E. Pearl St., Cincinnati, Ohio

Real Value in Rebuilt Tools

LATHES.

36"x22' Putnam triple geared, semi-quick change.
36"x14' LeBlond standard change gr.
24"x12' Rahn & Larmon, q.c., taper.
19"x10' LeBlond, q. c., pract. new.
18"x 8' Monarch, q. c., with taper and draw-in attachment.
18"x10' Greaves-Klusman, q. c.
16"x 8' Seneca Falls, q.c., taper.
16"x 6' National, q. c., geared head, arranged for motor drive.
14"x 6' Bradford, q. c. tool room, with taper, relieving and draw-in attachment and oil pan.

MILLING MACHINES.

No. 2 Brown & Sharpe univ., cone type, complete.
No. 12 Brainerd universal, cone type, complete.
No. 3 B. & S. vert., single pulley.
No. 3-B heavy Brown & Sharpe pl., single pulley.
No. 3 LeBlond plain, cone type.
No. 2 Cincinnati plain, cone type.
No. 6 Whitney hand miller.

DRILLING MACHINES.

6' American Tool Wks. plain radial, gear box drive.
5' American Tool Wks. plain radial, gear box drive.
4' Western plain radial, gr. box dr.
2½' Cincinnati-Bickford plain radial, gear box drive.
24" Hoefer upright.
22½" Barnes upright.
20" Prentice Bros. upright.
4-spdl. 20" Barnes gang drill, with auto. approach and return feed.
2-sp. Allen hi-speed sensitive b. b.
14" Henry & W. hi-speed ball b'r'g.

MISCELLANEOUS.

Air hammer, 3B Nazel, motor drive, practically new.
Automatic, No. 23 New Britain, 6-spdl., cap. 1½"; sacrifice price.
Boring mill, No. 21 Lucas horizontal, 2½" bar.
Brake, hand, 12' Dries & K., steel.
Flat turret lathe, 3"x36" J. & L., chucking equipment.
Grinder, 10"x50" Norton plain.
Grinder, 10"x30" Landis plain.
Grinder, No. 60 Heald cylinder, serial No. 1470, complete.
Planer, 30"x30"x12' Gray, 1 head.
Planer, 26"x26"x6' Cincinnati, two heads on rail.
Press, power, No. 3½ Toledo, o.b.i.
Shaper, 24" Cincinnati b.g. crank.
Shear, Quickwork circle, 60" thrt., 14 gauge and lighter.
Shear, power, 42" Niagara, for 18 gauge and lighter.
Turret screw mch., 1" Pratt & W.
Turret screw mch., No. 4 B. & O.
Turret screw mch., No. 4 W. & S., power feed to cross slide.
Welder, National elec. spot, 36"thrt., cap. 3 pieces ⅜" plate.

And many others. It will pay you to get our prices before buying.

FOR SALE BY

Cincinnati Mchy. & Supply Co., 215 E. Pearl St., Cincinnati, Ohio

A few bargains—write for list.

Bolt cutter, 1" National, 2-spindle, late type.....$300.
Bolt cutter, 2" Acme.....295.
Grinder, 10x30" Taft-P. univ.... 400.
Grinder, LeBlond tool & cutter 200.
Keyseater, No. 2 Davis, 8 cut... 225.
Lathe, 18"x10' Lodge & Davis.. 200.
Lathe, 18"x8' Monarch, fine condition.....$325.
Miller, No. 2 Brown & Sharpe universal, complete..... 575.
Shaper, 15" Springfield, crank.. 265.
Turret lathe, 2"x24" J. & L., geared head..... 300.

FOR SALE BY

Cincinnati Mchy. & Supply Co., 215 E. Pearl St., Cincinnati, Ohio

A few Large Tools priced very low.

LATHES.

36"x24' Bradford, triple grd..$1,400.
48"x20' Pond..... 1,500.
44"x24' Pond, triple geared..$1,100.
42"x60' Pond, triple geared... 2,400.

BORING MILLS.

42" King boring mill, like new
52" King boring mill, like new
54" Bullard, boring mill, like new
} At about half price
10' Niles boring mill.....$1,800.

PRESSES.

No. 1 Bliss toggle, 90% new...$ 900.
No. 4 Bliss horning, 95% new.$ 450.

GEAR CUTTERS.

Gleason, for spur gears up to 12'.
16"x72" Gould & Eberhardt.

PLANERS.

36"x36"x10' Gray, 3 heads.....$ 800.
36"x36"x10' Pond, 3 heads..... 750.
48"x48"x14' Gray, 3 heads.....$1,100.

SHAPER.

24" Gould & Eberhardt, 28" extension.....$ 500

FOR SALE BY

The O'Brien Machinery Co., 113 N. Third St., Philadelphia, Pa.

Bending rolls, 12' Kling, motor dr., 15" & 11" dia. rolls, cap. ¼" plate.
Drill, 32" Aurora, motor driven, tapping attachment.
Grinder, 6"x32" Norton plain.
Hammer, 100 lb. Massillon, steam.
Lathe, 24"x12' Schumacher & Boye.
Miller, No. 2 Cincinnati plain, geared head, single pulley drive.
Miller, No. 3-H LeBlond plain.
Miller, No. 3-B Hendey plain.
Miller, No. 4 LeBlond plain, heavy duty.
Miller, No. 2 Rockford universal.
Miller, No. 3 Kempsmith universal.
Milling and drilling machine, No. 2 Knight vertical.
Pipe machines, 3", 4", 6", 8" & 12" Oster, Cox, Eaton-Cole & Burnham and Jarecki makes, belt or motor driven, complete stock.
Planer, 36"x36"x12" Woodward & Powell, motor driven, 3 heads.
Planer, 54"x54"x14' Pond Machine Tool Co., two heads.
Presses, Nos. 18, 19 and 20 Bliss.
Press, No. 54 Toledo gr. str. side.
Punch, No. 2 H. & J., sgl. end, 30" thrt., motor dr., cap. ¼" thru 1".
Punch, Rock River, sgl. end, 4" thrt., motor dr., cap. 1½" thru 1".
Punch, No. 7 Kling, 36" throat, cap. 1 5/16" thru ⅞" plate.
Punch and coping machine, 26" cap., Long & A. type B, motor driven.
Punch and shear, No. 3 Hilles & J., dbl. end, motor dr.; punch end, 42" thrt., cap. 1½" thru 1"; shearing end, 36" thrt., cap. 1" plate, 2½" round, 7"x1½" flat, 5"x5"x⅞" angle.
Radial drill, 48" Cincinnati Bickford, motor driven.
Shapers, 12", 14", 16", 21" and 24" stroke, assorted makes.
Shear, Ryerson rotary bevel, cap. ⅜" plate.
Trimming press, No. 75½ Bliss, straight side, with side shear attachment.
Turret lathe, No. 6½ Bardons & Oliver, wire feed, cabinet base.

SECOND-HAND MACHINERY

FOR SALE BY

B. L. Saltzman, - 524-526 W. Van Buren St., Chicago

MOTORS.

New ¼ h. p., 1 phase, a. c., 110 volt ..... $10.00.
New ½ h. p., 1 phase, rep. ind., 110/220 volt ..... 32.50.
New 1 h. p., 1 phase, rep. ind., 110/220 volt ..... 50.00.
New 1 h. p., 3 phase, 60 cycle ..... 40.00.

All of the above, factory guaranteed for one year.

We also have a variety of other types, new and used, from ¼ h. p. to 200 h. p., a. c. and d. c.

LATHES.

2½"x26" Acme flat turret.
20"x8' LeBlond.
18"x 8' Flather.
14"x 6' Sebastian.
14"x 6' American.
14"x 6' LeBlond.

DRILL PRESSES.

22" Barnes.
24" Barnes.
25" Superior, b.g., tapping attach.
3 spindle Sigourney.

PUNCH PRESSES.

No. 1, No. 2, No. 3 and No. 5.

MISCELLANEOUS.

Bolt threader, Wells, single and double head.
Boring mill, 30" Colburn.
Grinder, disc, No. 8 Besly 20".
Miller, No. 1 Kempsmith plain.
Miller, No. 23 Fox plain.
Miller, No. 1½ Kempsmith universal.
Screw machine, No. 2 Foster.
Shaper, 14" Hendey.
Shear, power sq., 6' Niagara.
Slitter, 36" Fuller.

We have for sale a large line of woodworking and ironworking machinery.

Write us today for what you need. Also complete line of belting, pulleys, shafting and hangers.

A CHAIN

The advertisers in the Blue Book pay Hitchcock. He sends you the Blue Book free. You buy the articles advertised. The chain is complete.

BUT—

—suppose the advertisers do not know that you saw it in the Blue Book—where does Hitchcock come in? When writing to advertisers, won't you kindly give Hitchcock credit?

SPECIAL BARGAINS!

NEW and USED Nos. 2 & 3 AXLE LATHES,

Car Wheel Borers, Wheel Lathes, Steam Hammers, Planers, Boring Mills, Slotters, Board Drop Hammers, Etc., Etc.

Send us a list of your requirements—we can save you money

DAVID A. WRIGHT, Inc., 601 W. Monroe St., CHICAGO, ILL.

LARGEST STOCK IN THE EAST

New and Used High Grade Modern MACHINE TOOLS

***Guaranteed* At Prices to Net You a Worth While Saving**

BORING MILLS

4—Bullard 24" New Era type, vert.
2—Niles-Bement-Pond 52", vert.
1—Landis No. 35 horiz., floor type.

DRILLS—Upright and Radial

3—Snyder 28" vertical.
1—Minster D-3, heavy duty.
4—2½' Mueller Radials, S. P. D.
1—Foote-Burt 4½, 4-spindle, rail.
2—New Turner No. 3, vert. turret.
1—N.-B.-P. 96" Ridgeway, motor drive, plain radial.
1—Western 6', plain radial.
1—Baush 6'.

DRILLS—Multiple Spdl., Rect. Head

1—Natco No. 14, q. c. g.
1—Natco No. 30, 12 spindle.
2—New Baush No. 3, 21 spindle.
1—New Baush No. 4, 56 spindle.
1—Fox, 6 spindle.

PLANERS

7—Putnam 26x26x8', 2 heads.
1—Woodward & P. 36x36x12', 4 hds.
1—Putnam 48"x48"x12', 2 hds., m.d.
1—Putnam 48"x48"x30', 4 heads.
1—Cleveland Openside 30"x30"x8'.

MILLERS—Plain, Mfg., Univ. & Vert.

2—Milwaukee No. 1½ plain.
1—Brown & Sharpe No. 2 plain.
1—Milwaukee No. 3-B universal.
1—Milwaukee No. 3-B plain.
2—Briggs type B.
2—Taylor & Fenn vertical.
1—Becker No. 4B and No.5C vert.
1—Becker "C." vertical.
1—Newton duplex.

GRINDERS

1—Springfield-B., 12x12x48 vert.
1—P. & W. 36", vertical surface.
1—Brown & Sharpe No. 14 plain.
16—Cincinnati No. 2, 12x36.
4—Norton 6x32 & 2—Norton 10x36.
1—Fitchburg 12x54.
1—Norton 16x36.
2—Heald No. 60 cylinder.
2—Heald Nos. 65 and 70.
3—Heald rot. sur. Nos. 210, 255, 260.

GEAR CUTTERS

2—Barber-Colman No. 2.
4—Hercules 8".
2—Brown & Sharpe 3x26.
1—Gould & Eberhardt 60", spur.
1—Fellows Nos. 61, 6 & 612.
1—Gleason 6", 11" & 18", bevel.

TURRET & SCREW MCHS.

1—Foster No. 1-B turret.
1—Warner & S. Nos. 2-A and 3-A.
3—Foster No. 2-B turret.
1—New Foster No. 10 turret.
4—Greenlee, 2½x26" turret.
4—J. & L. 2x24.
1—J. & L. 2-spindle turret.
1—J. & L. 3x36", flat.
1—Acme 1½" turret.

SHAPERS and SLOTTERS

1—G. & E. 16".
1—American, 28".
1—Newton 10" slotter.
1—Pratt & Whitney 10" slotter.

PRESSES

2—Toledo No. 53, flywheel.
4—Toledo No. 55 & No. 55½, grd.
1—Bliss No. 1½ dbl. action cam.

AUTOMATIC SCREW MCHS.

7—Gridley 4 spindle, cap. 1¼".

LATHES

New Star Lathes, all sizes with all attachments.

12—New South Bend 16x8 and 18x8 gap; 21x14.
10—New South Bend 15x5.
1—LeBlond 26x12, univ. crankshaft.
1—Walcott 26x14, 6", q. c. g.
1—Johnson 30x12, motor dr.

MISCELLANEOUS

1—Acme bolt cutter, 3"cap., motor.
1—Acme bolt cutter, 2-spdl., 1".
1—Acme 1" cap. dbl. hd. bolt cutter.
1—Landis 1" bolt cutter, dbl. hd.
1—Landis 1¼" cap., 3-spdl. bolt cut.
1—Landis 1½" bolt cutter, dbl. hd.
1—Landis 1½" 3-sp. mtr.dr. bolt cut.
1—Landis 2" bolt cutter, dbl. hd.

PARTIAL LIST—

Send for Our Complete Illustrated Stock List

MOREY AND CO. INC. 408 Broome St., NEW YORK, N. Y.

AVEY No. 1½

HIGH SPEED BALL BEARING DRILLS

5—Single Spindle
1—Two Spindle
1—Three Spindle
2—Four Spindle

ALL IN EXCELLENT CONDITION

Other Machines Selected from our Stock

No. 3 Cincinnati Vertical Miller.
No. 5-B Becker vertical Miller.
No. 6 Becker vertical Miller.
No. 2B Brown & Sharpe Plain Miller, single pulley drive.
No. 2B Heavy Brown & Sharpe Plain Miller, single pulley drive.
No. 3 Cincinnati Plain Millers (two).
No. 3 Kempsmith Plain Miller, latest type, excellent condition.
No. 3 Heavy Duty LeBlond Plain Miller, with vertical attachment.
24" Aurora Sliding Head Drill, with tapping attachment.
36" Aurora Sliding Head Drills, (2).
24" Barnes two-spindle All-Geared Drill, with pump, etc.
3' Dreses Radial Drill.
5' Prentice Radial Drill.
24" Kelly back geared Crank Shaper.
30"x30"x8' Ohio late type Planer, one head on rail.
36"x36"x15" Betts heavy type Planer, two heads on rail.
30" Bullard Vertical Boring Mill, one turret head.
36" Niles Vertical Boring Mill, two heads.
42" Bullard Vertical Boring Mill, two heads, motor drive.
24" Bullard Vertical Turret Lathe.
No. 2B Biusse Horizontal Boring Mill, 2½" bar.
6x32 Norton Grinder.
14x72 Norton Plain Grinder.
16x96 Landis Plain Grinder.
16x48 Landis latest type Crank Pin Grinder, almost new.
20"x8' Lodge & Shipley Geared Head Lathe, quick change.
20"x10' American Geared Head Engine Lathe, quick change.
21" Gisholt Turret Lathe, latest type.
80 lb. Bradley Helve Hammer, excellent condition.
1½" Acme Double Head Bolt Cutter, rebuilt, excellent condition.
6' Robinson Brake.
10' Pond Vertical Boring Mill.

36" Bullard Vertical Turret Lathe, excellent condition

Our New Stock List Just Issued. Write for a Copy

A. D. WHITE MACHINERY CO.

108-114 N. Jefferson St., CHICAGO

NEW 3 PHASE MOTORS CHEAP. 3 H. P. $57.50; 5 H. P. $67.50

LATHES

9" to 13" Barnes, h. s., cp. r., new.
12"x 5' Cleveland, geared head.
14"x 8' Young.
14"x 6' Hamilton, grd. hd., motor dr.
14"x 8' Sidney, double back geared.
14"x10' Reed-Prentice.
16"x 8' Sidney, double back geared.
16"x 8' Kern, semi-quick change.
18"x 8' Bradford.
18"x10' American, quick change.
20"x 8' American, geared head.
20"x10' Prentice, taper.
24"x24' Prentice, with raising block.
25"x12' Sidney heavy duty.
25"x14' Schumacher & Boye.
28"x 8' Bridgeford, heavy duty.
Ames precision bench, ½" & 1" cap.
8x60" & 10x72" Fitchburg Lo-Swing.

TURRET LATHES and SCREW MACHINES

1½" Tilted turret hand screw mche.
1" and 1⅛" Mulholland.
2x24 & 3x36 J. & L., dbl. equipment.
No. 3-B Foster, 5" capacity, new.
6" Gridley auto., single spindle.
Nos. 52 and 56 National Acme.
⅝" P. & W. automatic, single spdl.
21" Gisholt.

SHAPERS

14" Niles, traveling head.
14" Steptoe, crank.
16" American, tool room.
16" & 24" Barker, b. g. crank.
16" Smith & Mills, b. g. crank.
20" Walcott, geared.

PLANERS

24"x24"x 6' Gray.
32"x32"x 8' Gray.
36"x36"x10' Cincinnati, 2 heads.
60x60x17' Betts, 2 heads.

PRESSES

Nos. 3-A & 6-A Willard inclinable.
No. 1 Toledo inclinable.
Nos. 1½, 2, 2½ & 4 Robinson.
Emco, bench, for radio parts.
No. 35 Niagara straight side.
Perkins, dbl. housing, wt. 4,000 lbs.

DRILLS and RADIALS

3' and 3½' Silver, new, gear box.
3' & 4½' Morris plain gear box.
3½' Canedy-Otto plain, new.
4' Universal Radial Drill Co. plain.
Sensitive 1, 2, 3, 4 and 6 spindle.
22", 24", 26", 28" and 32", sliding hd.
20"—24" & 26" Barnes, all geared.
4-spindle Sigourney sensitive.
4-spindle Reed sensitive.
Electric drills, Thor, all sizes.

MILLING MACHINES

No. 25 Becker plain, power feed.
No. 1 B. & S. universal.
Nos. 2-A & 4-B Becker vertical.
No. 3 LeBlond, with vertical attach.
No. 2 H Brown & Sharpe plain.
Briggs type "A" high duty, 24x8 table.
No. 7 Becker Lincoln type.
Oesterlein 24x7½x18 plain.

GRINDERS

Nos. 1, 3 & 78 W. & M. surface.
No. 2 W. & P. 10x30 universal.
6"x15" Fitchburg plain.
12x36 Cincinnati universal.
12x42" & 16"x30" Landis plain.
12"x72" Brown & Sharpe plain.
36" and 66" Yates plate.
No. 60 Heald cylinder.
Nos. 2 & 3 Ohio universal & tool.
No. 4 Gardner 20" double disc.
No. 20 Bryant, chucking.
B. & S. No. 24 dbl. spdl., cylinder.
Capital internal, new, 2"x2".
Valve, Kwikway, motor driven.

MISCELLANEOUS

Band saw, metal, Klemm.
Band saws, Napier 4"x4", 10"x10".
Bending rolls, 7' for ⅜" plate.
Boring mill, Bullard 34" turret hd.
Boring mill, 54" & 60" Colburn, 2 hds.
Brake, 10', 18-gauge metal.
Broaching machine, No. 3 LaPointe.
Cold saw, Burr, 3" capacity.
Compressors, 5x4, 8x8 and 12x10.
Drawing tables, adjust., 42"x6' top.
Gear cutter, 28" No. 3 B. & S.
Gear millers, Bilton No. 1. (5).
Hammer, 40 lb. Bradley, helve.
Hammer, 150 lb. Standard drop.
Oil separator, Springfield.
Pipe machines, 2", 4", 6" & 12".
Pumps, Gould triplex, 6½x8" & 7x8".
Punch & shear ½ by ½, 10" throat.
Riveter, ¾" Schuster.
Riveting hammers, No. 3-A h.sp. (2).
Scale, 1500 lb. Toledo, dial type.
Sceleroscopes, Shore, (2).
Shear, 5' Robinson, for 10 gauge.
Shear, No. 20 Quickwork, 30" throat.
Shear, circular, Pettingell 60".
Slotter, 18" Bement-Miles.
Tapping mche., ⅝" Rickert-Shafer.
Threading mche., W. & P. 2-spindle.

THE OSBORNE & SEXTON MACHINERY COMPANY
COLUMBUS DEPT. H. OHIO

POWER PRESSES

EXCLUSIVELY

Large Quantity of Brand New Presses

At Considerably Less than Regular Price

Used Presses, Rebuilt by Experts

Write for illustrated catalogue showing all types and makes, giving descriptions and prices. Over 1000 bargains in stock. All priced to net you a considerable saving.

Don't Fail to Send Us Your Inquiries

Joseph HYMAN & Sons

Richmond St. and Erie Ave., Philadelphia, Pa.

Phone Kensington 13-14

Always in the Market to Buy Presses in Good Condition. Send Us a Description or Your Surplus Presses.

PRICED TO SELL

High Grade Machine Tools

Slightly used. With a good-as-new, money-back guarantee

AUTOMATICS

No. 2 B. & S. Full Automatic.
⅞-1¼ Cleveland Model A.
2" Cleveland Model A.
2¾-3¼ Cleveland Model A.

DRILLS

36" Colburn Heavy Duty.
No. 14 Natco.
Nos. ½-1-1½ Avey H.S. Sens.
20" 4-Spindle Rockford.
Garvin Double End Horiz.

GRINDERS

10x36 Norton.
14x36 Norton.
No. 10 B. & S. Plain.
No. 4 Landis Universal.
No. 70 Heald Internal.
No. 2 B. & S. Surface.

MILLERS

28" Cincinnati Duplex.
No. 2 Rockford Univ. S. P. D.
Nos. 2 & 3 Cincinnati plain.
No. 28 Ohio.
No. 2 Kempsmith universal.

MISCELLANEOUS

1½" Landis Bolt Cutter.
Taft Pierce Thread Miller.
36" Gisholt Vert. Tur. Lathe.
9x9 Peerless Saw, Motor Drive
24x24x6 Powell Planer.
No. 0 Mitts & Merrill Keyseater
4" P. & W. Spline Miller.
300 Face and Straddle Milling Cutters, Inserted Teeth, H. S., 4" to 14" Dia., Ingersoll, Barber-Colman and Union.

Above is partial list—Send us your inquiries

Mid-West Machine Tool & Supply Co.

321-323 E. Fourth Street **Davenport, Iowa**

Snaps from Our Latest Purchases of

Three Big Plants!

All Equipment offered at Low Quick Sale Prices

Partial List! Send Us Your Inquiries!

PHONE - WIRE - WRITE

LATHES

11"x 5' Myers.
12"x 5' Vernon, q. c. g., t. a.
16"x 6' Putnam, t. a.
18"x 6' Springfield, t. a.
19"x10' LeBlond, crankshaft.
20"x 8' American, q. c. g.
20"x10' Bradford, b. g.
20"x 8' Cincinnati, b. g.
21"x12' LeBlond, q. c. g.
24"x12' American, q. c. g.
30"x16' LeBlond, q. c. g.
36"x32' LeBlond, q. c. g.

SHAPERS

14",16",20",24",G. & E. & Rockford.
24" Norton Draw-Cut Shaper.

PRESSES

No. 7-B, 74½, 75½, 77½, 79½ Bliss.
No. B-201, DG-55, DG-56, E-57 Ferracute.
No. D L. & A. Heavy Duty Press
No. 6 American, o. b. i.

FORGING MACHINES

Rock River, Standard and Cleveland Bulldozers.
1½", 3" and 5" Ajax.

MILLERS

No. 3-H LeBlond, plain.
No. 15 Garvin, plain.
No. 21 Garvin, plain.
No. 2 Pratt & Whitney, vertical.
No. 3 Brown & Sharpe, vertical.
No. 5-B Becker, vertical.
No. 5-C Becker, vertical.
No. 6 Becker, vertical.

HAMMERS (BOARD)

400 lb. Pratt & Whitney.
600 lb. Union.
800 lb. Union.
1000 lb. Union.
2000 lb. Bliss.
2500 lb. Bliss and Chambersburg.
3000 lb. Bliss.

HAMMERS (STEAM)

300 lb. Post.
600 lb. Massillon, s. f.
800 lb. Bement, s. f.
1000 lb. McDougal & Potter, s. f.
1500 lb. Chambersburg, d. f.
2000 lb. Chambersburg, d. f.
2500 lb. Chambersburg, d. f.
4000, 6000, 10,000 and 12,000 lb. Bement, d. f.

PUNCHES AND SHEARS

Pels I-Beam shear, capacity 15".
6"x6"x1" Cleveland Angle Shear.
6' Long & Allstatter Gate Shear, cap. 1", thr. 36".
2½" cap. Chicago Alligator Shear.
5" cap. Carlin Alligator Shear.
Cleveland sgl. end, ⅞" cap., 20" thr.
Cleveland sgl. end, 2½x1" cap. 24" thr.
Cleveland sgl. end, 1½" cap., 27" thr.
Cleveland sgl. end, 1½" cap., 36" thr.
Cleveland sgl. end, 1½" cap., 48" thr.
No. 8 Whiting single end, 1½" capacity, 42" thr.
Above M. D. with arch. jaws.

MISCELLANEOUS

Allen Yoke Riveters, various sizes.
6' Bending roll, cap. ½".
1½", 2", 2½" National Bolt Cutters.
2", 4", 6", 8" and 12" Pipe Machines.
Standard Cooper and Notcher.
Cleveland Horiz. Rail Straightener.
3½" Norris Plain Radial Drill.
24" Steinle Turret Lathe, 6" hole.
80 lb. Bradley Helve Hammers.
500 lb. Bradley Trip Hammers.
600 lb. Beaudry Power Hammers.
16"x48" Landis Crankshaft Grinder.
16"x36" Landis Universal Grinder.
26"x96" Landis Plain Grinder.
Motors from 5 to 250 H. P., 3 ph., 60 cycle, 220-440 volt.

Harris Brothers Co.

35th and Iron Sts., Chicago

Lafayette 1900

To Buy a Good Used Machine

Tool From "Oviatt"—Is An Investment, Not An Expense

Toledo Knuckle Joint Coining Press, No. 666.
Toledo Straight Side Press, No. 59¼.
Bliss Stiles Flywheel Presses Nos. 3 & 4
Toledo Geared Presses No. 35-P & 36.
Bliss No. 2-W Wiring & Reducing Press.
Bliss Toggles, Nos. 1½, 3½-A and 3½-C.
Ferracute Presses, Nos. P-4 and PG-5.
Geo. A. Ohls 8' 6" Brake, Capacity 10 guage.
Bullard 24" Vertical Turret Lathe.
Cincinnati-Acme 2¼"x24" Flat Turret, Grd. Hd.
Libby 18" Turret Lathes, (4) Excellent.
Warner & Swasey No. 3-A Universal Turret.
W. F. & J. Barnes 26" Drill Press, Tapping Att.
Colburn D-4 Drills (2), mounted on one base.
No. 17 Foote-Burt 4 Spindle Adj. 2" Cap.
Smith & Mills 17", American 20" Shapers.
Briggs Millers, Type "B" 34"; Type "A" 22".
Brown & Sharpe No. 3-A Universal Miller.
Becker Vertical Millers, Nos. 5-C and 6.
Betts 3" Bar Horizontal Boring Mill.
Oesterlein Universal Tool Grinder, No. 3.
Colburn 60" Vertical Boring Mill.
High Speed Riveting Hammers, Nos. 3A-HD & 4A.
Acme Bolt Cutters, 2½" Sgl. and 1" Dbl.
Garvin Tappers, Nos. 2 & 2-BG.
Draw Benches, 25,000 and 15,000 pound Cap.
Bulldozers, W. & W. Nos. 2, 3, 4, 7, 8, 27 & 29.
Beaudry 250 lb. Hammer; Bell 800 lb. Steam.
Ajax 4-inch Upsetter, Steel Bed, Side Shear.
Libby 26" Turret Lathe, hole in spindle 7½".
Federal Spot Welder 1/16" Cap., Power Drive.

The Above And Hundreds Of Other Machine Tools In Stock

D. C. OVIATT & CO.

1102 St. Clair Ave., Cleveland, Ohio

ReMANUFACTURED MACHINE TOOLS

-(ORIGINATED BY US)-

REG. U. S. PAT. OFF.

EVERY ReMANUFACTURED MACHINE TOOL in our place represents an unusual BARGAIN. A card will bring our latest GREEN LIST containing 2000 machine tools. We welcome inspection of our plant and our process.

LATHES.

1—60"-63"x18' Johnson.
1—51"x20' LeBlond.
1—45"x24' Pond, triple gd.
3—36"x42' LeBlond, q. c. g.
7—36"x30' Pittsburgh, q. c. g.
1—36"x19' Johnson, triple geared.
1—30"x20' American, gd. hd.
15—each 26"x9', 10', 12', 16', 18' and 20' Bridgeford, q. c. g.
6—24"x12' Providence, q. c. g.
1—24"x16' Lodge & Shipley.
89—20"x 8', 12' & 16' Amer., q. c. g.
5—17"x 6' LeBlond mfg. auto.
50—14", 16" and 18" Lathes.
5—13"x 5' Willard.
9—Porter Cable Lathes.

DRILLING MACHINES.

1—3' Prentice Bros. Radial.
2—3' American Sens. Radial.
1—6' Prentice. Radial.
2—No. 30 Natco.
10—4 & 6 spindle Allen, b. b.
1—24" Cleveland.
1—24" Barnes all geared.
1—36" Snyder.
1—No. 121 Baker.
1—No. 315 Baker.

TURRET LATHES.

1—3"x36" Jones & Lamson.
1—1"x15" Pratt & Whitney.
9—1¼" Foster No. 3.
19—1-1/16" Foster No. 2.
1—1" Warner & Swasey.
1—¾" Pratt & Whitney.
11—24" Gisholt.
1—No. 10, 3" Bardons & Oliver.

GEAR CUTTERS & HOBBERS.

8—No. 1 Farwell.
2—Nos. 2-26 & 2-36 B. & S.
6—No. 6 Fellows.
2—11" Gleason.
2—No. 2 Barber-Colman.
2—18H Gould & Eberhardt.

BORING MILLS.

6—24" Bullard New Era vertical.
1—30" Gisholt vertical.
1—48" Colburn vertical.
1—54" Colburn.
1—54" Bullard.
2—62" King.
1—38" Bar Rochester Floor Borer.

CRANK SHAPERS.

1—12" Smith & Mills.
10—16" and 20" Ohio.

MILLERS.

3—No. 1½B Special Milwaukee.
2—No. 2 Rockford plain.
2—No. 3 Kempsmith plain.
10—3B heavy B. & S., s. p. d.
1—No. 3 Brown & Sharpe.
1—No. 3 Brown & Sharpe univ.
1—No. 5 Ingersoll knee type.
1—No. 2½ Milwaukee vertical.
1—No. 3 Brown & Sharpe vertical.
3—No. 4B Becker. vertical.
1—No. 5 Becker vertical.
4—No. 8 Becker vertical.
9—24"x24"x12' Ingersoll slab.

PLANERS.

1—60"x48"x10' Gray, spiral geared.
3—42"x42"x16' Rockford.
2—36"x36"x10' Beckett.
5—36"x36"x18' Cincinnati.
1—30"x30"x10' Woodward & P.
1—24"x24"x12' Whitcomb.
1—24"x24"x 6' Hamilton.
1—24"x24"x 6' Liberty.

GRINDERS.

46—4"x20" to 20"x96" Landis, Brown & Sharpe, Cincinnati, Modern and Norton plain and universal.
1—18"-30"x96" Norton gap.
1—84" Diamond face grinder.

PRESSES.

20—Nos. 57 and 58 Toledo.
1—No. 69 Stoll.
1—87 Bliss.

WRITE FOR COMPLETE LIST

Let us put you on our monthly mailing list

HILL, CLARKE & CO. OF CHICAGO

649 W. WASHINGTON BLVD., CHICAGO, ILL.

Bargains in Radial Drills

1—2½' Standard type, heavy duty, gear drive, MUELLER radial drill.

1—3' Standard type, heavy duty, gear drive, MUELLER radial drill.

1—4' Standard type, heavy duty, gear drive, MUELLER radial drill.

Machines practically new.

PRICES ATTRACTIVE

Write us for particulars

The Mueller Machine Tool Company

Radial Drills and Lathes

ESTABLISHED 1902 **CINCINNATI, O.**

Real Bargains in Used Tools

BORING MILLS

30" and 36" BULLARD boring mills, 3-jaw chuck tables.
36" GISHOLT turret boring and turning mill.
60" ROGERS-HEMPHILL boring mill, two heads.
2½" bar CLEVELAND horizontal, gearbox drive.
2½" bar LUCAS horizontal, gearbox drive.

DRILL PRESSES

28" SIBLEY & WARE, sliding head, b. g., p. f.
6' GANG radial, gearbox drive.
3' AMERICAN sens. radial.
No. 14 Natco 10-sp. (bored for 18 spindles.)
No. 15 HARRINGTON 4-spindle rail type, 1½" capacity.

GEAR CUTTERS

No. 12 BARBER-C. gr. hobber.
No. 6 FELLOWS gear shaper.

MILLING MACHINES

No. 2 ROCKFORD universal, also plain.
No. 2 CINCINNATI universal, all geared feeds.
No. 3 CINCINNATI vertical milling machine.

PLANERS AND SHAPERS

30"x30"x 6' POND planer, one head.
32"x32"x12' GRAY, two heads, self cont. countershaft.
36"x36"x10' WILSON, two heads, like new.
36"x30"x12' GORTON, two heads, countershaft.
16" and 20" OHIO back geared crank shapers.

Above is small part of our stock. Send for complete list

STOCKER-RUMELY-WACHS CO.

117 N. Jefferson St., **Chicago, Ill.**

A Quick Orderly Liquidation Sale

Of Machine Tools and Plant Equipment of the

RUSSEL MOTOR AXLE CO. at NO. DETROIT, MICH.

GEAR MACHINES

No. 6 Felloe gear shaper.
No. 612 Felloe gear shaper.
6", 11", 18" Gleason generators.
15" Gleason generator, spiral type.
12", 18", 20" Gleason gear roughers.
G. & E. gear roughers.

SHAPERS

20" R. A. Kelly shaper.
24" G. & E. shaper.

GRIDLEYS

$\frac{3}{4}$" to $1\frac{1}{4}$" Gridley multiple spindle automatic screw machines.
$2\frac{1}{8}$" to $4\frac{1}{2}$" single spindle automatic screw machines.

MILLING MACHINES

No. 0 LeBlond plain.
Nos. 1, 2, 3 and 5 Cincinnati plain.
18" Cincinnati duplex.
No. 3 Hendey Norton plain.
No. 5 Hendey Lincoln type.
No. 3 Hendey universal.
No. 2 Cleveland plain.
No. 3 LeBlond universal.
Model "A" Gooley & Edlund.

ENGINE LATHES

12"x6', 18"x8' & 20"x10' Hendey.
14"x6' & 16"x6' Hamilton.
14"x8' F. E. Reed.
16"x6' & 20"x8' American.
20"x8' Lodge & Shipley.
24"x12' Warner.
24"x15' LeBlond.
30"x12' Lodge & Shipley.

TURRET LATHES

6 A Model 2 auto. turret lathe.
Nos. 3, 4 & 6 Warner & Swasey.
Nos. 2-A & 3-A Warner & Swasey.
3"x36" Jones & Lamson.
$1\frac{1}{2}$"x8" & 3"x36" Pratt & Whitney.
2"x26" Pratt & Whitney.
7-A Chucking machines.
24" Gisholt, 6" hole.

RADIAL DRILLS

4' Dreses, 20"x30" table.
3' American Tool Co., 16"x26" table.

DRILL PRESSES

22", 25" & 26" Barnes single spdl.
22" Cincinnati-Bickford.
25" Reed-Prentice.
25" J. E. Snyder Co.
28" Sibley Machine Tool Co.
Nos. 413 & 416 Baker Brothers.
No. 23 Foote-Burt 2-spdl. gang.
$22\frac{1}{2}$" Barnes 3-spindle gang.
4-spindle Foote-Burt gang, 3" spdl.
4-spindle Foote-Burt gang, $3\frac{1}{2}$" spdl.
6-spindle multiple Baush.
16-spindle multiple Baush, b. d.
24-spindle multiple Baush.
36-spindle multiple Natco.

PRESSES

Cleveland single end punch, 12" thr.
No. 22 Michigan horning press.
No. 35 Michigan grd., 10" thr., 3" str.
No. 5 Ames compound mandrel.
15-ton Lucas power forcing.
15-ton Lucas geared force.
100-ton Chambersburg hydraulic.
30-ton Metalwood hydraulic.

GRINDERS

Heald 18" surface.
10A Bryant internal.
No. 1 Besly plain, universal table.
10x24, 10x72 & 10x96 Norton plain.
No. 615 Fitchburg cylindrical.
No. 2 Gould & Eberhardt cutter.
12"x42" Landis universal.
No. 2-A Landis universal.
No. 75 Heald universal.
No. 1 Wilmarth universal.

BORING AND TURNING MILLS

30" Gisholt boring mill.
18" Cleveland horiz. boring mill.

MISCELLANEOUS

Nos. 3, 3A & 4 La Pointe broach. mch.
No. 00 Baker Bros. keyseater.
3"x5" Fairbanks-Morse pump.
5"x5" Fairbanks-Morse pump.
$1\frac{1}{2}$" Acme single spindle bolt cutter.
2" National single spdl. bolt cutter.
No. 2X Garvin auto. tapping mch.
Thompson type "C" riveter.
6 Gear testing machines.
5 to 75 h. p., 3 ph., 60 cy. 220 v. mtrs.
14"x12" Ingersoll-R. air comp., b.d.
Auto. call system, 15 call, model 16.
Stromburg cost keeping system, consisting of No. 30 Master clock and 6 secondary clocks and other equipment.

Shafting, Belting, Pulleys, Hangers and Small Shop Tools.

— ADDRESS —

RUSSEL MOTOR AXLE CO., NO. DETROIT, MICH.

J. J. McCABE SINGER BUILDING NEW YORK CITY

LATHES

120" swg., 42' Bed, Bement-Miles, triple geared belted motor drive.
84" swg., 46' Bed, Putnam, geared headstock, motor drive. Triple geared, complete, latest style.
66" swing, 46' Bed, grd., motor dr.
54" swg., 21' Bed, Pond, t. g.
40" swg., 16' McCabe, geared head, single pulley drive, q. c.
36" swing, 14' Bridgeford, geared head, motor drive.
32" swg., 20' McCabe, 3-step cone double back geared, q. c.
26" swg., 14' Niles-Bement-Pond, q. c., motor drive, 11-hp. motor.
24" swing x 14' Bed, Reed-Prentice geared head, single pulley drive, quick change.
18" swing, 10' Bed, McCabe, q. c.
14" swing, 8' Bed, Sidney, q. c.
3½" swing, 60" Bed, Fitchburg Lo-Swing.

BORING MILLS

72" Niles, 2 heads.
60" Bullard, 2 heads.
50" Bullard (Bridgeport), 2 heads.
42" Baush, 2 heads, quick change.
Horizontals, Floor and Knee Type.

BOILER SHOP TOOLS

18" Double end Long & Allstatter Punch and Shear.
42" Perkins Punch.
50" McCabe Punch and Shear.
60" Hilles & Jones Horiz. Punch.
4' Hand Bending Rolls, drop end.
8' Bending Rolls, heavy type, power raise.
10' Bending Rolls, drop end housing.
19" Gap Air Riveter.
800 lb. Bement-Miles Steam Ham.
28" Espen-Lucas Cold Saw.
42" Newton Cold Saw.

DRILLS

2½' Arm Radial with gear box.
3' Arm Radial cone drive.
4' Arm Radial with gear box.

McCABE "2-in-1" LATHES

Aptly named the most useful Tool in the shop, because it takes the work of a 26" Lathe as well as that of a 48" Lathe. And it does both with equal efficiency.

12' Bed, Cone Drive, complete equipment, including Grd. Plate and set of 7½" raising blocks.

26' Bed, regular pattern 26-48" Swing.

32' Bed, Belted Motor Drive. Complete with motor and electrical equipment May also be run with belt regular cone drive. Inspection may be made NOW before loading on cars.

You can buy one of these Lathes with the same confidence that you would repose in a new Lathe of the same make, while saving over $2000.

PLANERS

84"x60"x30' Pond, 4 heads.
60"x60"x16' Gray spiral grd., 4 hds.
54"x54"x12' Pond, 4 heads.
48"x48"x15' Pond, 2 heads.
42"x42"x14' Sellers, 3 heads.
26"x26"x 6' Niles, 1 head.
42"x36"x16' Detrick & Harvey, open side.

SHAPERS

12" stroke, plain, Smith & Mills.
14" & 16" stroke, pl., Smith & Mills.
24" stroke, back geared, G. & E.
48" stroke, Morton Draw Cut, heavy style.

SLOTTER

24" Niles - Bement - Pond, motor driven, like new.

COMPLETE STOCK

Milling Machines, Grinders, Gear Cutters, etc.

J. J. McCabe Lathe & Machinery Corp'n

SINGER BUILDING - - NEW YORK CITY

The Entire Equipment

Of Our Modern Plant

Is Being Liquidated in Single Lots

CONSISTING OF

About 2,000 modern high-grade machine tools of well-known makes used in the manufacture of four and eight cylinder motors;

A complete Tool Room, equipped with the best tools obtainable;

A Screw Machine Department, equipped with Acmes, Gridleys, Clevelands, New Britains, Warner & Swaseys, Jones & Lamsons, etc.;

And a complete department for the heat treating of steel.

This is without doubt the best lot of tools ever offered for sale. This plant was in operation only a short time. The tools were under strict supervision and were handled with care; hence can be classified as good as new.

Our prices are very low. The first cost is not considered, as this liquidation must be completed in the shortest possible time.

Get in touch with us for quick bargains
A personal call from your representotive is the best

Pittsburgh Model Engine Company

Lexington & McPherson Sts., Pittsburgh, Pa.

Classified Finding Index

Air Guns
Powell Co., Wm., Cincinnati

Arbors, Solid
Nicholson & Co., W. H., Wilkes-Barre, Pa.

Auto-Gages For Dies
Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Automatics
New Britain Machine Co., New Britain, Conn.

Balancing Ways
Anderson Bros. Mfg. Co., Rockford, Ill.
Bowsher Co., N. P., South Bend, Ind.

Balls, Bearing and Burnishing
Abbott Ball Co., Hartford, Conn.

Band Saw Machines, for Metal
Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Porter-Cable Machine Co., Syracuse, N. Y.

Bars, Bronze, Cored and Solid
Bunting Brass & Bronze Co., Toledo, O.

Barrels, Tumbling
Abbott Ball Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 13th, Chicago

Bearings, Babbitt-Lined Bronze
Bunting Brass & Bronze Co., Toledo, O.

Bearings, Babbitted
Bunting Brass & Bronze Co., Toledo, O.

Bearings, Bronze
Bunting Brass & Bronze Co., Toledo, O.

Bench Legs, Steel
New Britain Mchc. Co., New Britain, Conn.

Bending Machines, Hand and Power
Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lowthwaite Mchc. Co., T. H. 417E. 31st., N. Y.
Lourie Mfg. Co., Springfield, Ill.
Pedrick Tool & Machine Co., Philadelphia

Boring Bars
Pedrick Tool & Machine Co., Philadelphia

Boring Bars, Cylinder
Pedrick Tool & Machine Co., Philadelphia

Boring Machines, Horizontal
Avey Drilling Machine Co., Cincinnati
Pedrick Tool & Machine Co., Philadelphia
Rockford Drilling Machine Co., Rockford, Ill.

Bronze
Bunting Brass & Bronze Co., Toledo, O.

Burnishing Equipment, Ball
Abbott Ball Co., Elmwood, Conn.

Bushings, Brass and Bronze
Bunting Brass & Bronze Co., Toledo, O.

Casters for Trucks
Hamilton Caster & Mfg. Co., Hamilton, Ohio

Chains, Power Transmission
Whitney Mfg. Co., Hartford, Conn.

Chucking Machines
New Britain Mchc. Co., New Britain, Conn.

Chucks, Collet
Hardinge Bros., Inc., 1770 Bertean Ave., Chicago

Chucks, Drill
Barber-Colman Co., Rockford, Ill.
Jacobs Mfg. Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 13th, Chicago
Titan Tool Co., Erie, Pa.

Chucks, Drill and Tap
Barber-Colman Co., Rockford, Ill.
Peter Bros. Mfg. Co., Algonquin, Ill.
Scully-Jones & Co., 2012 W. 13th, Chicago

Chucks, Keyway Cutting
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Lathe
Westcott Chuck Co., Oneida, N. Y.

Chucks, Wrenchless
Thomas Elevator Co., 31 S. Hoyne Ave., Chicago

Clamps, Die
Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Clutches, Friction
Edgemont Machine Co., Dayton, O.

Cold Saws
Burke Machine Tool Co., Conneaut, Ohio
Peter Bros. Mfg. Co., Algonquin, Ill.

Collets
Hardinge Bros., Inc., 1770 Bertean Ave., Chicago

Contract Work Wanted
Burke Machine Tool Co., Conneaut, O.
Cowdrey Machine Works, C. H., Fitchburg, Mass.

Counterbores and Spot Facers
Glenzer Co., J. C., Detroit, Mich.

Cranes, Portable
Canton Foundry & Mchc. Co., Canton, Ohio

Crank Pin Turning Machine
Pedrick Tool & Machine Co., Philadelphia

Cutters, Keyseating
Davis Keyseater Co., Rochester, N. Y.
Scully-Jones & Co., 2012 W. 13th, Chicago
Whitney Mfg. Co., Hartford, Conn.

Cutters, Milling
Barber-Colman Co., Rockford, Ill.
Genesee Mfg. Co., Rochester, N. Y.
Whitney Mfg., Co., Hartford, Conn.

Cutting-Off Machines
Peter Bros. Mfg. Co., Algonquin, Ill.

Cylinder Boring Machines, Portable
Pedrick Tool & Machine Co., Philadelphia

Classified Finding Index

Dial Indicators
Federal Products Corp'n, Providence, R. I.
Wallace Brothers, 160 N. Wells St., Chicago

Die Sets
Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Dieing Machines
Henry & Wright Mfg. Co., Hartford, Conn.

Dies, Pipe Threading
Bignall & Keeler Mche. Wks., Edwardsville, Ill.

Dies, Self-Opening Adjustable
Rickert-Shafer Co., Erie, Pa.

Drilling Machine Heads, Multiple
National Automatic Tool Co., Richmond, Ind.
United States Drill Head Co., Cincinnati

Drilling Machines, Bench
Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Reed Co., Francis, Worcester, Mass.
Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Horizontal
Rockford Drilling Machine Co., Rockford, Ill.

Drilling Machines, Multiple Spindle
Avey Drilling Machine Co., Cincinnati
Henry & Wright Mfg. Co., Hartford, Conn.
National Automatic Tool Co., Richmond, Ind.
Reed Co., Francis, Worcester, Mass.
Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Portable Electric
Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Stow Flexible Shaft Co., Philadelphia, Pa.
Strand Co., N. A., 5001 N. Lincoln St., Chigo
Wisconsin Electric Co., Racine, Wis.

Drilling Machines, Post
Henry & Wright Mfg. Co., Hartford, Conn.
Mueller Machine Tool Co., Cincinnati

Drilling Machines, Radial
Henry & Wright Mfg. Co., Hartford, Conn
Mueller Machine Tool Co., Cincinnati
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Sensitive
Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Henry & Wright Mfg. Co., Hartford, Conn.
Leland-Gifford Co., Worcester, Mass.
Reed Co., Francis, Worcester, Mass.
Taylor & Fenn Co., Hartford, Conn.
Wisconsin Electric Co., Racine, Wis.

Drilling, Milling and Boring Machines, Vertical
Aurora Tool Works, Aurora, Ind.

Drilling Machines, Vertical
Aurora Tool Works, Aurora, Ind.
Avey Drilling Machine Co., Cincinnati
Henry & Wright Mfg. Co., Hartford, Conn.
Leland-Gifford Co., Worcester, Mass.
Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Drilling and Tapping Attachments
Aurora Tool Works, Aurora, Ind.
Barber-Colman Co., Rockford, Ill.
Henry & Wright Mfg. Co., Hartford, Conn.
Reed Co., Francis, Worcester, Mass.

Dust Handling Equipment
Knickerbocker Co., Jackson, Mich.

Emery Wheel Dressers and Cutters
Precision Truing Machine & Tool Co., Cincinnati, O.
Taylor & Fenn Co., Hartford, Conn.

Feeders, Oil and Soda Water
New Britain Machine Co., New Britain, Conn.

Filing Machines
Robinson Tool Wks., Inc., Waterbury, Conn.

Flexible Shafts
Strand Co., N. A., 5001 N. Lincoln St., Chigo

Forgings, Hollow Bored
American Hollow Boring Co., Erie, Pa.

Furnaces, Heat Treating, etc.
Kidder, A. B., Canton, Ohio

Furniture, Machine Shop
New Britain Machine Co., New Britain, Conn.

Gauges, Piston and Piston Ring
Federal Products Corp'n, Providence, R. I.

Gauges, Thread
Federal Products Corp'n, Providence, R. I.

Gears
Boston Gear Works Sales Co., Quincy, Mass.

Gear Cutting Machines
Barber-Colman Co., Rockford, Ill.

Grinding Machines, Belt
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Peerless Surfacing Machine Co., Troy, N. Y.

Grinding Machines, Bench
Bodine Electric Co., 2256 W. Ohio St., Chgo.
Finley Co., J. A., Allston, Mass.
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Hisey-Wolf Machine Co., Cincinnati

Grinding Machines, Cutter, Reamer and Tool
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mche. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Cylinder
Whitney & Son, Baxter D., Winchendon, Mass.

Grinding Machines, Cylindrical
Jarecki Mche. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Die
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mchs. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Classified Finding Index

Grinding Machines, Disc
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Porter-Cable Machine Co., Syracuse, N. Y.

Grinding Machines, Drill
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Face
Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Internal
Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio
Whitney & Son, Baxter D., Winchendon, Mass.
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Portable Electric
Bodine Electric Co., 2256 W. Ohio St., Chgo.
Finley Co., J. A., Allston, Mass.
Hiner-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Stow Flexible Shaft Co., Philadelphia, Pa.
Strand Co., N. A., 5001 N. Lincoln St., Chgo
Wisconsin Electric Co., Racine, Wis.

Grinding Machines, Snagging
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mchc. & T. Co., Grand Rapids, Mich.

Grinding Machines, Surface
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Tap
Gallmeyer & Livingston Co., Grand Rapids, Mich.

Grinding Machines, Universal
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Hack Saw Machines
Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Racine Tool & Machine Co., Racine, Wis.

Hammers, Air
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Nazel Engineering & Mch. Wks., Philadelphia

Hammers, Belt & Motor Driven
Nazel Engineering & Mch. Wks., Philadelphia

Hammers, Power
Nazel Engineering & Mch. Wks., Philadelphia
Quickwork Co., St. Marys, Ohio

Hammers, Riveting
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Quickwork Co., St. Marys, Ohio

Hobs
Barber-Colman Co., Rockford, Ill.

Hoists, Electric
Thomas Elevator Co., 33 S. Hoyne Ave., Chicago

Hoists, Portable
Canton Foundry & Machine Co., Canton, Ohio

Keyseating Machines
Bucher-Smith Co., East Liverpool, Ohio
Burr & Son, John T., Brooklyn, N. Y.
Chattanooga Mchy. Co., Chattanooga, Tenn.
Davis Keyseater Co., Rochester, N. Y.
National Machine Tool Co., Cincinnati
Whitney Mfg. Co., Hartford, Conn.

Lathe Accessories and Attachments
Sidney Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Bench
Hardinge Bros., Inc., 1770 Bertean Ave., Chicago
Monarch Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Engine
Carroll Mch. Tool Co., A. V., Cincinnati, O.
Hardinge Bros., Inc., 1770 Bertean Ave., Chicago
Monarch Machine Tool Co., Sidney, O.
Mueller Machine Tool Co., Cincinnati
Porter-Cable Machine Co., Syracuse, N. Y.
Sebastian Lathe Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Fox Monitor
Barker Co., Wm., Covington, Ky.

Lathes, Gap
Carroll Mch. Tool Co., A. V., Cincinnati, O.

Lathes, Short Bed
Monarch Machine Tool Co., Sidney, O.
Porter-Cable Machine Co., Syracuse, N. Y.
Sidney Machine Tool Co., Sidney, O.

Lathes, Turret
Monarch Machine Tool Co., Sidney, O.

Mandrels, Expanding
Nicholson & Co., W. H., Wilkes-Barre, Pa.

Mandrels, Solid
Nicholson & Co., W. H., Wilkes-Barre, Pa.

Metal Cutting Machines, Sheet
Quickwork Co., St. Marys, Ohio

Milling Attachments
Burke Machine Tool Co., Conneaut, Ohio

Milling Cutters
Barber-Colman Co., Rockford, Ill.

Milling Machines, Bench
Burke Machine Tool Co., Conneaut, Ohio

Milling Machines, Hand
Burke Machine Tool Co., Conneaut, Ohio
Whitney Mfg. Co., Hartford, Conn.

Milling Machines, Plain
Burke Machine Tool Co., Conneaut, Ohio
Gallmeyer & Livingston Co., Grand Rapids, Mich.

Milling Machines, Portable
Pedrick Tool & Machine Co., Philadelphia

Classified Finding Index

Milling Machines, Vertical
Burke Machine Tool Co., Conneaut, Ohio
Taylor & Fenn Co., Hartford, Conn.

Mills, Adjustable Hollow
Genesee Mfg. Co., Rochester, N. Y.

Motors, Electric
Reliance Electric & Eng. Co., Cleveland
Wisconsin Electric Co., Racine, Wis.

Oil Cups
Gits Bros. Mfg. Co., 1940 S. Kilbourn Av., Chicago
Tucker, W. C. & F. C., Hartford, Conn.

Oil Hole Covers
Tucker, W. C. & F. C., Hartford, Conn.

Pattern Shop Machinery
Townley Mfg. Co., John T., Cincinnati

Pins, Leader And Dowel
Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Pipe Bending Machines
Pedrick Tool & Machine Co., Philadelphia

Pipe Cutting and Threading Machines
Bignall & Keeler Mch. Wks., Edwardsville, Ill.

Planers, Valve Seat, Portable
Pedrick Tool & Machine Co., Philadelphia

Polishing and Buffing Machines
Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
New Britain Machine Co., New Britain, Conn.
Wilmarth & Morman Co., Grand Rapids, Mich.
Wisconsin Electric Co., Racine, Wis.

Presses, Arbor
Atlas Press Co., Kalamazoo, Mich.
Lourie Mfg. Co., Springfield, Ill.
Nicholson & Co., W. H., Wilkes Barre, Pa.
Sheldon Machine Co., 403 E. 29th, Chicago

Presses, Broaching
American Broach & Mch. Co., Ann Arbor, Mich
Lourie Mfg. Co., Springfield, Ill.

Presses, Foot
Rockford Iron Works, Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Presses, Power
Hendley & Whittemore Co., Beloit, Wis.
Lostbough-Jordan T & M. Co., Elkhart, Ind.
Lourie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.

Presses, Punch
Henry & Wright Mfg. Co., Hartford, Conn.
LaSalle Machine Works, 3013 S. LaSalle St., Chicago
Lewthwaite Mche. Co., T. H., 417 E. 31st., N. Y.
Lostbough-Jordan T. & M. Co., Elkhart, Ind.
Lourie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.

Presses, Screw
Jarecki Mche. & T. Co., Grand Rapids, Mich.
Lourie Mfg. Co., Springfield, Ill.
Towsley Mfg. Co., John T., Cincinnati

Pulley Machinery
Avey Drilling Machine Co., Cincinnati

Punch Press Feeds
Rockford Iron Works, Rockford, Ill.

Punch, Shear and Bender, Hand
Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago

Punches, Hand
Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mche. Co., T. H., 417 E. 31st St., New York
Whitney Metal Tool Co., Rockford, Ill.

Punches, Power
Hendley & Whittemore Co., Beloit, Wis.

Punches and Dies
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mche. Co., T. H., 417 E. 31st., N. Y.
Rockford Iron Works, Rockford, Ill.

Racks, Bar Stock
New Britain Machine Co., New Britain, Conn.

Reels, Extension
Cincinnati Specialty Mfg. Co., Cincinnati, O.

Riveting Machines
Blomquist-Eck Machine Co., Cleveland, O.
Grant Mfg. & Mche. Co., Bridgeport, Conn.

Rod Cutters
Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mche. Co., T. H., 417 E. 31st., N. Y.
Tucker, W. C. & F. C., Hartford, Conn.

Scraping Machines, Hand & Pneumatic
Anderson Brothers Mfg. Co., Rockford, Ill.

Screw Driving Machines, Automatic
Reynolds Machine Co., Massillon, Ohio

Screw Driving Machines, Bench
Hergl Manufacturing Co., Bridgeport, Conn.

Screw Driving Machines, Portable Electric
Hisey-Wolf Machine Co., Cincinnati

Screw Machines, Automatic
New Britain Mche. Co., New Britain, Conn.

Second-Hand Machinery
Allen Machinery Co., S. C., 510 West Van Buren St., Chicago
Bath & Co., Cyril J., Cleveland, O.
Bennett Mchy. Co., 50 Church St., New York
Botwinik Brothers, New Haven, Conn.
Brown Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Cincinnati Mchy & Supply Co., Cincinnati, O.
Clark Machinery Co., Cleveland, O.
Dickow Machinery Co., Fred C., 2105 W. Lake St., Chicago
Dillon, B. H., Receiver, Portsmouth, O.
Eastern Machinery Co., Cincinnati, O.
Emerman & Co., Louis E., 1761 Elston Ave., Chicago
Essley Machinery Co., E. L., 555 Washington Blvd., Chicago

Classified Finding Index

Second-Hand Machinery—Continued

Fitzsimmons-Cole Mchy. Co., Pittsburgh, Pa.
Harris Bros. Co., 35th & Iron, Chicago
Hess-Schenck Co., Cleveland, O.
Hill, Clarke & Co., 649 W. Washington Blvd., Chicago
Horst Mfg. Co., J., Lafayette, Ind.
Hyman & Sons, Joseph, Philadelphia
Johnson & Sons Machinery Co., Wm. C., St. Louis, Mo.
Jones Machine Tool Co., Cincinnati
Little Co., W. F., Cleveland
Lynd-Farquhar Co., Boston, Mass.
McCabe Lathe & Machinery Corp., J. J., 149 Broadway, New York
McCoy-Brandt Mchy. Co., Pittsburgh, Pa.
McDonald Machinery Co., St. Louis
Marr-Galbreath Mchy. Co., Pittsburgh, Pa.
Mid-West Machine Tool & Supply Co., Davenport, Ia.
Molitor Machy. Co., Chas., 118 S. Clinton St., Chicago
Morey and Co., Inc., 408 Broome St., N. Y.
Niles-Bement-Pond Co., 111 Broadway, N.Y.
Norton-Broadway Mchy. Co., Cincinnati, O.
O'Brien Machinery Co., Philadelphia
Osborne & Sexton Machy. Co., Columbus, O.
Oviatt & Co., D. C., Cleveland, O.
Patterson Tool & Supply Co., Dayton, O.
Pittsburgh Model Engine Co., Pittsburgh, Pa.
Randle Machinery Co., Cincinnati
Reeve-Fritts Co., 37 S. Desplaines, Chicago
Reliance Mchy. Sales Co., Pittsburgh, Pa.
Russel Motor Axle Co., No. Detroit, Mich.
Russell Machine Co., Pittsburgh, Pa.
Saltman, R. L., 524 W. Van Buren St., Chgo.
Standard Screw Products Co., Detroit, Mich.
Stocker-Rumely-Wachs Co., 117 N. Jefferson St., Chicago
Stoehr Mchy. Co., A. M., 844 N. Wells St., Chicago
Strafer, A. F., 30 Church St., New York
Strong, Carlisle & Hammond Co., Cleveland
Tuhor, Velick & Co., Inc., Lake & Desplaines Sts., Chicago
Warner, H. D., Hartford, Conn.
Wayne Machinery Co., Fort Wayne, Ind.
Webb Machinery Co., O. T., 510 West Van Buren St., Chicago
Winterer, Herman L., Philadelphia
White Machy. Co., A. D., 108 N. Jefferson St., Chicago
Wright, David A., Inc., 601 W. Monroe St., Chicago, Ill.

Shafts, Flexible

Stow Flexible Shaft Co., Philadelphia, Pa.

Shafts, Steel

American Hollow Boring Co., Erie, Pa.

Shaping Machines

Columbia Machine Tool Co., Hamilton, Ohio
Osborne & Sexton Machy. Co., Columbus, O.
Rhodes Mfg. Co., Hartford, Conn.
Smith & Mills Co., Cincinnati
Universal Machine & Tool Co., Canton, O.

Shears, Hand

Armstrong-Blum Mfg. Co. 341 N. Francisco Av., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Kidder Mfg. Co., J. F., Burlington, Vermont
Lewthwaite Machine Co., T.H., 417 E. 31st St., New York
Oliver Mfg. Co., Buffalo, N. Y.
Quickwork Co., St. Marys, Ohio
Tucker, W. C. & F. C., Hartford, Conn.
Whitney Metal Tool Co., Rockford, Ill.

Shears, Power

Hendley & Whittemore Co., Beloit, Wis.
Quickwork Co., St. Marys, Ohio

Sheet Metal Working Machinery

Quickwork Co., St. Marys, Ohio

Slotting Machines

Rhodes Mfg. Co., Hartford, Conn.

Spacing Washers

Detroit Stamping Co., Detroit, Mich.

Straightening Machines

Towsley Mfg. Co., John T., Cincinnati
Whitney Metal Tool Co., Rockford, Ill.

Tap Extractors

Walton Co., Hartford, Conn.

Tapping Machines and Attachments

Aver Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Leland-Gifford Co., Worcester, Mass.
Rickert-Shafer Co., Erie, Pa.
Whitney Mfg. Co., Hartford, Conn.
Whitney Metal Tool Co., Rockford, Ill.

Threading Tools

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

Tool Holders

Armstrong Bros. Too Co., 308 N. Francisco Av., Chicago

Tools, Boring

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

Tools, Lathe and Planer

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

Tools, Machinists'

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

Tools, Spot Facing

Genesee Mfg. Co., Rochester, N. Y.

Trucks, Machine Shop

New Britain Machine Co., New Britain, Conn.
Towsley Mfg. Co., John T., Cincinnati

Turntables

Canton Foundry & Machine Co., Canton, O.

Universal Joints

American Tool Works, Inc., Hartford, Conn.
Borgeson Mfg. Co., Inc., Torrington, Conn.
Boston Gear Works, Quincy, Mass.
National Automatic Tool Co., Richmond, Ind.

Valve Grinders

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago

Valves

Powell Co., Wm., Cincinnati

Vises, Drilling Machine

Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Thomas Elevator Co., 31 S. Hoyne Ave., Chicago

Vises, Machinists'

New Britain Machine Co., New Britain, Conn.
Parker Co., Charles, Meriden, Conn.

Vises, Shaper

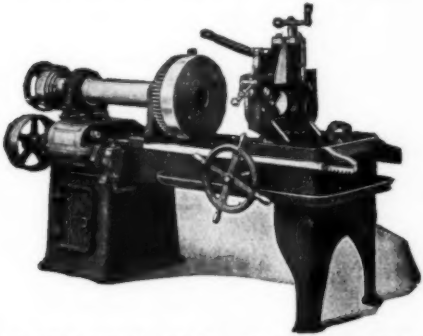
Columbia Machine Tool Co., Hamilton, Ohio

Wood Working Machinery

Hendley & Whittemore Co., Beloit, Wis.
New Britain Machine Co., New Britain, Conn.
Porter-Cable Machine Co., Syracuse, N. Y.
Towsley Mfg. Co., John T., Cincinnati
Whitney & Son, Baxter D., Winchendon, Mass.

—a Pipe Threading Problem?

Let B & K Engineers Solve It for You



(No. 4 P. D. Q. C. Improved. Belt Drive. Cap. 1" to 4". All Gears Covered)

TO BEGIN WITH—our line of 17 styles and sizes offers you a wide choice. We have the right machine for every pipe-threading requirement. If you will write us the details of your needs, our engineers will carefully consider your case from every angle and make the proper recommendation. Our experience of over 40 years is freely at your service.

B & Ks are equipped with a gear box drive, which makes it easy to obtain the correct threading speeds. They also have the Peerless rapid adjusting mechanism. Dies can be changed without removing a screw. There are more good features with which we should like to acquaint you.

Let us mail the Catalog. Write us your needs.

Bignall & Keeler Machine Works

Edwardsville, Illinois

Sales Agents: Manning, Maxwell & Moore, New York, N. Y.

Chicago Boston St. Louis Pittsburgh Cleveland Philadelphia
Buffalo Detroit Syracuse Seattle San Francisco Atlanta

Index of Advertisers

A

Abbott Ball Co. 32
Allen Machinery Co., B. C. 86
American Broach & Mche. Co. 48
American Hollow Boring Co. 22
American Tool Works, Inc. 40
Anderson Bros. Mfg. Co. 50
Armstrong-Blum Mfg. Co. 61
Armstrong Bros. Tool Co. 60
Atlas Press Co. 46
Aurora Tool Works 31
Avey Drilling Machine Co. 29

B

Barber-Colman Company 25
Barker & Co., Wm. 30
Bath & Co., Cyril J. 79
Bennett Machinery Co. 76
Bignall & Keeler Mche. Works 111
Bodine Electric Co. 20
Borgeson Manufacturing Co. 40
Boston Gear Works Sales Co. 41
Botwinik Brothers 73
Bowsher Co., N. P. 50
Brown Machinery Co. 83
Brownell Machinery Co. 80
Bucher-Smith Co. 42
Bunting Brass & Bronze Co. 5
Burke Machine Tool Co. 71
Burr & Son, John T. 44

C

Canton Foundry & Mche. Co. 68
Carbon Steel Company 90
Carroll Machine Tool Co., A. V. 8
Chattanooga Machinery Co. 45
Cincinnati Mchy. & Supply Co. 92
Cincinnati Specialty Mfg. Co. 44
Clark Machinery Co. 84
Columbia Machine Tool Co. 4
Colven, James M. 10
Cowdrey Machine Works, C. H. 22

D

Danly Machine Specialties, Inc. 11
Davis Keyseater Co. 43
Detroit Stamping Co. 54
Dickow Machinery Co., Fred C. 84
Dillon, B. H., Receiver 73

E

Eastern Machinery Co. 91
Edgemont Machine Co. 66
Emerman & Co., Louis E. 73
Easley Machinery Co., E. L. 80

F

Federal Products Corporation 52
Finley Co., J. A. 20
Fitzsimmons & Cole Machinery Company 90

G

Gallmeyer & Livingston Co. 17
Genesee Manufacturing Co. 67
Gits Bros. Mfg. Co. 56
Glenzer Co., J. C. 38
Grant Mfg. & Machine Co. 32

H

Hamilton Caster & Mfg. Co. 70
Hardinge Bros., Inc. 12
Harris Bros. Co. 99
Hendley & Whittemore Co. 55
Henry & Wright Mfg. Co. 72
Hergi Manufacturing Co. 34
Hess Schenck Co. 75
Hill, Clarke & Co. of Chicago 101
Hisey-Wolf Machine Co. 21
Horat Manufacturing Co., J. 88
Hyman & Sons, Joseph 98

I

Independent Pneumatic Tool Co. 34

J

Jacobs Manufacturing Co. 58-59
Jarecki Machine & Tool Co. 47
Johnson & Sons Mchy. Co., Wm. C. 84
Jones Machine Tool Co. 86

K

Kidder, A. B. 24
Kidder Mfg. Co., J. F. 62
Knickerbocker Co. 51

L

LaSalle Machine Works 62
Leland-Gifford Co. 27
Lewthwaite Machine Co., T. H. 54
Little Co., W. P. 83
Loshbough-Jordan T. & M. Co. 63
Lourie Mfg. Co. 46
Lynd-Farquhar Co. 91

26" UNIVERSAL THE SHAPER WITH THE TABLE STROKE

Is more than a shaper of the ram-stroke type

THE TABLE STROKE permits the 26" Universal to do—(1) ***more work,*** because it takes heavier cuts up to 40 strokes a minute; (2) ***more accurate work,*** the firm, even action of the table stroke insuring a new degree of shaper precision; (3) ***more kinds of work,*** up to and including that of a small open-side planer —a combination of goodness that we believe well merits your investigation.

May we tell you the rest of the interesting story?

Universal Machine & Tool Company
Canton, Ohio

Index of Advertisers—Continued

M

McCabe Lathe & Machinery Corporation, J. J. 104
McCoy-Brandt Machinery Co. 90
McDonald Machinery Company 88
Marr-Galbreath Machinery Co. 87
Mid-West Machine Tool & Supply Co. 98
Molitor Machinery Co., Chas. 86
Monarch Machine Tool Co. 6
Morey and Co. Inc. 95
Mueller Machine Tool Co. 102

N

Nash, L. V. 83
National Automatic Tool Co. 37
National Machine Tool Co. 42
Nazel Engineering & Mch. Wks. 57
New Britain Machine Co. 116
Nicholson & Co., W. H. 7-49
Niles-Bement-Pond Co. 85
Norton-Broadway Mchy. Co. 82

O

O'Brien Machinery Co. 92
Oliver Mfg. Co., W. W. 14
Osborne & Sexton Mchy. Co. 97
Oviatt & Co., D. C. 100

P

Parker Company, Charles .....
Patterson Tool & Supply Co. 78
Pedrick Tool & Machine Co. 69
Peerless Surfacing Mche. Co., Inc. 15
Peter Bros. Mfg. Co. 30-64
Pittsburgh Model Engine Co. 105
Porter-Cable Machine Co. 26
Powell Co., The Wm. 24
Precision Truing Machine & Tool Company 23

Q

Quickwork Co. 64

R

Racine Tool & Machine Co. 14
Randle Machinery Co. 88
Reed Co., Francis 38
Reeve-Fritts Company 85
Reliance Elect. & Engineering Co. 2
Reliance Machinery Sales Co. 89
Reynolds Machine Company 53
Rhodes Manufacturing Co. 3
Rickert-Shafer Co. 13
Robinson Tool Works, Inc. 28
Rockford Drilling Machine Co. 35
Rockford Iron Works 63
Royal Piston Ring Co., Inc. 74
Russel Motor Axle Co. 103
Russell Machine Co. 77

S

Saltzman, B. L. 93
Scully-Jones & Co. 66
Sebastian Lathe Co. 6
Second-Hand Machinery ... 73 to 105
Sheldon Machine Co. 48
Sidney Machine Tool Co. 10
Smith & Mills Co. 4
South Bend Lathes Works 9
Stocker-Rumely-Wachs Co. 102
Stoehr Machinery Co., A. M. 82
Stow Flexible Shaft Co. 18
Strafer, A. F. 78
Strand & Co., N. A. 26
Strong, Carlisle & Hammond Co. 81

T

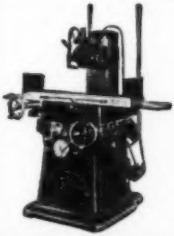
Taylor & Fenn Co. 33
Thomas Elevator Co. 12
Thompson Grinder Co. 18
Titan Tool Co. 36
Towsley Mfg. Co., John T. 65
Tubor, Velick & Co., Inc. 74
Tucker, W. C. & F. C. 60

U

United States Drill Head Co. 36
Universal Machine & Tool Co. 113

W

Wallace Brothers 52
Walton Co. 28
Warner, H. D. 87
Wayne Machinery Co. 89
Webb Machinery Co., O. T. 73
Westcott Chuck Co. 8
White Machinery Co., A. D. 96
Whitney Mfg. Co. 39
Whitney Metal Tool Co. 56
Whitney & Son, Baxter D. 16
Wilmarth & Morman Co. 115
Winterer, Herman L. 76
Wisconsin Electric Co. 19
Wright, David A., Inc. 94



Wilmarth & Morman Co.

Universal Cutter and Tool Grinders
Surface Grinders
Improved New Yankee Drill Grinders

BECAUSE of:—

Precision
Rigidity
Convenience of Control and Reputation

are rapidly becoming **STANDARD Equipment** in the important plants of the world.

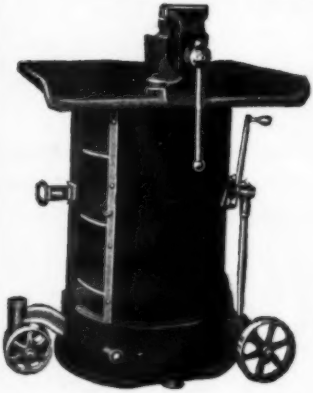
Wilmarth & Morman Co.

Manufacturers of Precision Grinding Machinery Since 1900

1185 Monroe Avenue, N W.
GRAND RAPIDS, MICH.

"New Britain" Vise Stand

Stationary or Portable



A Combined Work Stand and Tool Cabinet

With steel shell and iron base and top

A strong, stiff work bench and tool cabinet without excessive weight. Ideal for assembling rooms and garages, and particularly useful in close quarters.

The cabinet has three adjustable shelves, providing ample space for storing tools, and can be locked if desired. The top is flanged on sides and back to prevent tools falling off, and the front edge is turned down to afford easy access. Bulletin 212 describes it fully.

"New Britain" Shop Furniture also includes Pressed Steel Bench Legs, Bench Drawers, Work Stands, Adjustable Stools, Revolving Screw Racks, Tote Boxes, Portable Lathe Pans, etc. Write for descriptions and prices.

The New Britain Machine Company

"Shop Furniture Originators" **New Britain, Conn. U.S.A.**